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Great Exhibition of the Works of Industry of all Nations,
1851.

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OFFICIAL

Descriptive and Illustrated Catalogue.

FOREIGN STATES.

AUSTRIA

North and South Areas, C. to E. 58 to 61; F. 59 to 61; K. 59, 60;
L. to P. 58 to 62; Q. R. 56 to 61; S. 57 to 61.
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Commissioners, Chevalier de Burg, *and* Charles Buschek, Esq., 43 *Clarges Street, Piccadilly;*
Custom-house Agent, C. J. Major, 21 *Billiter Street.*

The Austrian productions form a highly-interesting feature in the Great Exhibition. About seven hundred and fifty exhibitors appear as the representatives of this important territory; and the articles forwarded by them must be acknowledged to have added a large share to the attractions of the Foreign side of the Building. So large a portion of annotatory matter has been introduced, in such places as appeared to be most suitable in the body of this Catalogue, that it is rendered less necessary to offer a lengthened introductory notice. To the matter so introduced it is merely necessary to add the remark, that originating from the best-informed sources, and conveying a very large amount of useful knowledge, not to be readily met with in any other work, it has been inserted with very little abbreviation. The raw materials are largely represented, and by a most interesting selection of objects illustrative of the mineral wealth of this monarchy.

"Austria abounds in every description of metal. All the more useful kinds, with the exception of platinum, are to be found therein; and in the production of the precious metals, Austria is surpassed by Russia alone. Transylvania is one of the richest countries of Europe in gold; Hungary, also rich in gold, is still richer in its yield of silver. Bohemia ranks next to Hungary in this respect, and Transylvania immediately after Bohemia. In the production of quicksilver, Austria, by reason of her possession of Carniola, stands next to Spain. Bohemia supplies excellent tin, Carinthia the purest lead, and Hungary is extremely rich in copper. Iron is produced throughout the countries of this empire, the only exceptions being Görz and Gradisca, Illyria and Venice. Styria is pre-eminent in respect both of the quantity and the quality of its iron, which is considered equal to any raised in Europe. Fossil and brown coal the Austrian dominions may be said to possess in inexhaustible abundance, and, in consequence, mining has been carried on in these regions with peculiar spirit and energy. Due advantage has been taken of the progress of modern science in so pushing the advancement of this branch of the national industry, that though it cannot be said to have attained the utmost degree of development which it may be capable of reaching, yet it must be allowed to have closely approximated to it."

Minerals, metals and their ores, chemicals, agricultural productions, silk raw and manufactured, models of machinery, carriages, and a variety of objects illustrative of the other classes of the Exhibition, are found in this collection. Numerous philosophical and musical instruments are also shown. The textile manufactures, and leather, paper, books, and printing are adequately illustrated in the various articles belonging to their classes. In glass manufactures Austria has long been pre-eminently distinguished, and the specimens exhibited sustain her celebrity. The metal manufactures are also illustrated by the contributions of a considerable number of exhibitors, whose productions bear comparison with the universally celebrated hardwares of England. Beautiful examples of porcelain and common wares are exhibited. The miscellaneous objects represent in an interesting manner those variations in the products of foreign artizans which characterise them, and distinguish them from our own. Universal interest is excited by the fine specimens of statuary and other art productions exhibited by Austria. The suite of rooms containing the articles made by the Messrs. Leistler, of Vienna, is one of the most interesting features in the Austrian department, and presents an imposing picture of the luxurious furniture of the nobility of Austria. The state bed, with its appendages, the dining-tables, sideboard, and chairs, exhibit a lavish outlay of ornamental labour. One portion of this furniture, a carved Gothic bookcase, is designed as a present to Her Majesty the Queen of England from His Majesty the Emperor of Austria.—R. E.

1 **Miesbach, Alois**, *Vienna*—Proprietor.

Coals, brown coals, and lignite, from Lower Austria, Upper Austria, Styria, Moravia, and Hungary.

[The coal mines of this exhibitor are the most extensive in the empire: his thirty mines contain a store of at least 900,000,000 cwt. of coal, whereof 864,000,000 have been discovered by himself. They give direct employment to 1,961 men, produce annually 2,750,000 cwt. of coal, and are already in a condition to furnish four times that quantity, although the greater part of them are only now being opened and prepared for working.

Coal is found in Austria in constantly increasing quantities, particularly in Bohemia, Moravia, Silesia, Lower Austria, and Hungary. Bohemia takes the first place as to the quantity, and partly, also, as to the quality of its coal, nearly half of the total quantity of the coal and brown coal produced in Austria being Bohemian. Considered generally, however, the production of coal is only trifling at present.

The production of coal, in 30 years, has increased tenfold; and at a rapid ratio. The prices of wood and charcoal are constantly increasing, with an annually increasing demand for fuel to be consumed in factories, &c. It is, therefore, very probable that the collieries of Austria will, at no distant period, be worked to a far greater extent than at present. Scarcely 100,000 cwt. of coals are extracted in a year from coal-fields that are known to contain as much as 1,500 millions of cwt. The exports of Austrian exceed the imports of foreign coal by about 300,000 cwt. A large proportion of the fuel obtained in Austria is lignite. This substance, which is intermediate in its character between wood and coal, and is of a brown colour, possesses considerable value as a calorific agent, although it is in this respect inferior to the ordinary coal of Great Britain. Its importance to the countries and districts where it is found can scarcely be exaggerated, and its abundance justifies the belief that the enormous thick detached beds in which it occurs will ere long be fully worked. The lignite not unfrequently presents those evidences of its origin from the decomposition of coniferous trees, from which the geologist draws his most accurate inferences.—R. E.]

Specimens of alum.

2 **Imperial Mines**, *Vienna*.

Mercury and cinnabar, and ores of the same, from Idria.

[A large quantity of mercury or quicksilver is annually produced at Idria, a town in the duchy of Carniola, the inhabitants of which are chiefly occupied in its extraction. The quicksilver mines are extremely productive. The cinnabar ore yields when very rich fifty per cent. of this metal. This ore is a sulphuret of mercury, and gives up the latter metal by sublimation.

With the quicksilver mines of Idria is connected a manufactory of vermilion, which produced, in the year 1847, 981 cwt. of that pigment. The residue of the quicksilver is used up to some small extent, about 300 cwt., for technical purposes and preparations, but the greater portion of it is sent abroad. The exports of quicksilver amount to an annual average of 2,341 cwt. (in the year 1846 they reached 5,478 cwt.), and of preparations derived from it, such as corrosive sublimate, calomel, &c., to 41 cwt. By the consumption of quicksilver, for the manufacture of vermilion and for other technical purposes, the value of the annual produce of the raw material is greatly increased. The mines have been worked for upwards of three centuries and a half, and were originally discovered by an accident.—R. E.]

Sulphur, from Szwoszowic in Galicia, and Radoboj in Croatia.

Rosette-copper, from Agordo in the province of Venice and Moldava.

Blistered copper, from Schmöllnitz in Hungary.

Tin, from Schlaggenwald in Bohemia.

[Tin, a metal which of late years has become of so much importance in the occupations of manufacturing industry, is not found within the Austrian monarchy in sufficient quantity to meet the demand for it. The imports of tin from abroad during the same period of five years, 1843 to 1847, amounted on an average to 3,785 cwt. annually, whilst the exports of this article were but 90 cwt., value 4,500 florins. But, whereas the imports of tin wares were, for the same time, inconsiderable, the exports under this head amounted to 301 cwt.]

Litharge, from Pzribram in Bohemia.

Zinc, antimony, and similar mining produce.

3 **Upper Hungarian Mining Association**,
Schmöllnitz, Hungary.

Quicksilver, refined copper, block copper, and various other similar productions for smelting.

[The whole quantity of raw copper raised in Austria is not used there. Until the year 1847, indeed, the imports of copper into Austria were greater than the exports from it; the excess of the former, as compared with the latter, during the years 1843 to 1846, averaging about 3,000 cwt. annually; but since 1847 these exports have been considerably in excess of the imports. In the year 1847 the imports reached 8,667 cwt., while the exports were 28,254 cwt.; but in the year 1848, for 3,891 cwt. imported there were 5,489 cwt. exported, so that, out of the whole production of that period, 58,568 cwt. remained in Austria. It should, however, be borne in mind that the copper found in Austria does not equal the Russian or the Swedish copper in quality, and that it is therefore indispensable to draw a supply of the finer sorts from abroad. Of the quantity produced beyond the amount that she exports, about 40,000 cwt. are converted at the copper-mills and rolling-works into 38,400 cwt. of copper sheeting and hollow ware (the Government establishments produced, in the year 1847, 6,562 cwt. of such ware and copper sheeting), and the remaining 18,568 cwt. were used for various alloys and other purposes. Copper acquires its highest increase of value when employed in the manufacture of percussion-caps, galvano-plastic productions, and brass hardware. Austria drives a brisk trade in articles of copper and brass with foreign customers.]

4 **Szumrák, Johann Friedrich**, *Neusohl, Hungary*
—Proprietor.

Cobalt and nickel ores, from Bocza, together with the residue obtained from the same.

Calcareous slate, from Molcsa in Hungary.

Analysis of the above residue:—

Ferdinand Level.
The raw ore contains 61·8 per cent. residue.
The residue:—

Nickel	22·546
Cobalt	19·886
Copper	9·719
Iron	15·403
Arsenic, sulphur, &c.	32·446
	100·

Dreibrüder Level.
The raw ore contains 54·8 per cent. residue.
The residue:—

Nickel	17·224
Cobalt	16·430
Iron	8·102
Bismuth	7·614
Copper	2·101
Arsenic, sulphur, &c.	48·499
	100·

[The ores of cobalt and nickel have only recently been obtained on a large scale in Hungary, the mines having only been in work for a few years. Both these valuable metals are yielded freely by the ores, which promise to become of considerable commercial interest when this department of industry becomes fully developed.]

5 Kochmeister, Friedrich, *Pesth, Hungary*—Proprietor.

Two kinds of spongy nickel from Hungarian ores; red and black oxide of cobalt. The varieties contain 97 and 98 per cent. of the pure metal, free from arsenic, and are well adapted for the manufacture of German silver.

6 Sápy, Alexander (Manager of the Philippi Jacobi Mine), *Rosenau, Hungary.*

Samples of nickel ores.

[The metallic wealth of Hungary has as yet been scarcely revealed. The extensive mineral deposits of the country have hitherto been worked chiefly by the state, and little opportunity has consequently arisen for commercial enterprise. It appears probable that ultimately the advantages of this mode of developing the resources of the country will be more fully perceived and appreciated.—R. E.]

7 Zemberg Mine, *Dobschau, Hungary.*

Ore of cobalt, and nickel.
Flower of cobalt, and nickel.

8 Kengyel, Johann (Manager of the Johannes Mine), *Rosenau, Hungary.*

Samples of Nickel ore.

[The annual produce of this mine is estimated at from 300 to 350 cwts.]

9 Batka, Wenzel, *Prague, Bohemia*—Manufacturer.

Bohemian mineral produce. Ores of uranium, nickel, vanadium, and cobalt. Oxide of iron, and various minerals.

[Uranium is a very rare metal, and occurs principally in two minerals, uranite and pitch-blende. Its oxides are used with success for enamel painting, and produce also a beautiful tint when employed in small quantities for colouring glass. Vanadium is a metal still more rare than the preceding, occurring in minute quantities in several iron ores. Cobalt is used extensively in the arts; and the beautiful blue colour communicated by it to glass, in the pigment called smalt, is well known.—R. E.]

10 Szegö, Sigismund (Manager of the Michaelis Mine), *Rosenau, Hungary.*

Antimony, and antimony ores.

11 Geiszberger, Franz (the Francis Smelting-works), *Metzenseifen, Hungary.*

Regulus of antimony.

12 Szollusz, Carl (Biserto Smelting-works), *Rosenberg, Hungary.*

Regulus of antimony.

13 Volderauer, George, *Salzburg*—Proprietor.

Specimen of arsenic ore.
White and yellow arsenical glass.

14 Hochberger, Johann (St. Procopi Chemical Works), *Kahr, Bohemia*—Proprietor.

Sulphate of iron.
Alum and sulphur.

[Sulphur is obtained in Austria in constantly increasing quantities; latterly, however, the consumption has become greater than the production, and, consequently, the imports of this article, so much required for chemical purposes, have exceeded the exports. A large quantity of alum is also manufactured in Hungary, Bohemia, Styria, and Silesia. Of alum, 39,113 cwt., whereof 15,371 cwt. were the production of Hungary, 14,750 cwt. of Bohemia, 5,000 cwt. of Styria, and 2,887 cwt. of Moravia and Silesia. The supply thus furnished of those products does not only cover the entire demand for them from the interior, but a surplus remains for exportation.

On an annual average 3,674 cwt. of alum, and 1,338 cwt. of the various kinds of vitriol, were imported from abroad; whilst the exports for the like term were 5,681 cwt. of alum, and 12,492 cwt. of vitriol.

Alum and sulphuric acid are so largely used in the arts as to form important articles of commerce in all countries. —R. E.]

15 Schönborn, Erwein, Count von, *Dlazkowic, Bohemia*—Proprietor.

Rough Bohemian garnets (*Pyrope*).

16 Prince Ferdinand von Lobkowitz, Duke of Raudnitz, *Bilin, Bohemia*—Proprietor.

Rough cut and pierced Bohemian garnets (*Pyrope*).

[The garnets of Bohemia have long enjoyed a reputation little inferior to the celebrated stones of the East. Their brilliancy and colour render them extremely valuable as articles of commerce and for ornamental uses. They occur chiefly in the neighbourhoods of Swietlau and Dlaschkowitz. Garnet is chemically an anhydrous silicate of lime and of alumina. Those exhibited have a beautiful red colour. Rough garnets are sold by the pound. When cut and pierced they are sold in rows containing 100 pieces to each row.—R. E.]

17 Imperial Salt Works, *Wielicska, Galicia.*

Samples of culinary salt.

[This important article, salt, forms the object of a State monopoly, and is of three descriptions — rock, boiled, and sea salt. The aggregate quantity produced is, on an average, 6,000,000 cwt. per annum, whereof 10 per cent. is sea salt, 36 per cent. boiled, and 54 per cent. rock salt.

In the year 1847 there were 211,000 cwt. of sea salt imported for the consumption of the Lombardo-Venetian provinces; whilst 895,400 cwt. of rock and boiled salt were exported: namely, 678,000 cwt. to Russia, 116,800 cwt. to Prussia, 48,000 cwt. to Turkey, 45,100 cwt. to Switzerland, and the residue, in smaller proportions, to Bavaria and Lichtenstein.]

18 Weber, Giov. Davide, *Venice*—Manufacturer.

Samples of fine cream of tartar.

19 Wagenmann, Seybel & Co., *Vienna*—Manufacturers.

Chemical productions, including tartaric acid, vinegar, acetic acid, acetate of soda, arsenic acid, chloride of lime, arseniate, sulphate, and muriate of potash.

[The production of chemical preparations, especially of those which have been brought forward by the great progress of manufactures in general, has latterly, owing to this impulse, furnished important results. Bohemia has especially distinguished herself by the manufacture of colours and of chemical preparations used in dyeing, whilst Vienna has not remained behind. Several of these productions—acids, and easily inflammable articles, saltpetre, phosphorus, &c.—are not exhibited, on account of the danger of carriage.

Saltpetre is also an article of State monopoly, but is chiefly manufactured by private individuals, who are bound to deliver their productions to the State. The refining, on the contrary, is principally provided for by the State itself. In 1847, the quantity of saltpetre produced amounted to 21,600 cwt. This was chiefly applied to the manufacture of gunpowder, and also to other purposes. The progress of this trade, however, is but inconsiderable.

Soda and potash are produced in Hungary in large quantities. The crystallized soda found on the soil is estimated at 30,000 cwt. annually, and the entire production of soda in Hungary, at 40,600 cwt., whereof about 10,400 cwt. are distributed over the other provinces. In these last, altogether, the same quantity is produced as is raised in Hungary alone; and there is to be added thereto the amount of the excess of imports (56,000 cwt.), over exports (55,000 cwt.), being 1,000 cwt.

Of potash about 350,000 cwt. are produced, and of this quantity 200,000 cwt. in Hungary, the remainder chiefly in Galicia. The production not only covers the whole demand for home consumption, but leaves a considerable excess for export. Thus, in the year 1847, the imports of potash amounted to 11,900 cwt., whereas the exports were 41,900 cwt.]

20 **Brosche, Franz Xaver**, *Prague, Bohemia*—Manufacturer.

Chemical productions, including succinic acid, tartaric acid, sesqui-oxide of chromium, sesqui-oxide of uranium, and mercurial compounds.

[In the manufacture of salts and acids for dyeing, and other purposes, considerable progress is being rapidly made. The fortunate results that have rewarded the activity of Bohemia in the expansion and improvement of chemical manufactures, which had their commencement in its territory, have excited the other provinces of the monarchy to follow her example in similar undertakings. Lower Austria already occupies a respectable place. In Upper Austria, Styria, the Tyrol, and Lombardy, the fact of this progress is not to be denied; but Carinthia possesses the most important manufacture of white lead, being favoured by nature with abundant ores of excellent pure lead.]

21 **Braun, G. Jacob**, *Prague, Bohemia*—Manufacturer.

Albumen, stannate of soda, and ferrocyanide of potassium.

22 **Engelmann, Samuel**, *Karolinenthal, near Prague*—Manufacturer.

Albumen, dextrine, laiogome, and artificial gum.

23 **Setzer, Johann**, *Weiteneggk, near Mölk, on the Danube*—Manufacturer.

Ultramarine blue, in eight shades. Ultramarine green. Cadmium yellow.

Red and rose madder.

24 **Kutzer & Lehrer**, *Prague*—Manufacturers.

Ultramarine blue, in eight shades.
Ultramarine, green and black.
Various colours, including chrome yellow, chrome red, &c.

25 **Fiala, Wenzel**, *Prague*—Manufacturer.

Indigo blue of three kinds.

26 **Heinzen Brothers**, *Tetschen on the Elbe, Bohemia*—Manufacturers.

Red and violet herb archil.
Red and violet extract of archil.
Specimens of dyed wool, from which the above have been used.

27 **Kinzlberger & Co.**, *Prague*—Manufacturers.

One hundred and eighty samples of colours.

28 **Petz, W.**, *Pesth, Hungary*—Manufacturer.

Carmine of two kinds.

29 **Rattich, Johann B.**, *Atzgersdorf, near Vienna*—Manufacturer.

Black ink for copper-plate printing.

30 **Herbert, Franz Paul Baron von**, *Klagenfurt and Wolfsberg, Carinthia*—Manufacturer.

White lead of different kinds.

31 **Egger, Gustav, Count von**, *St. Veith, Carinthia*—Manufacturer.

White lead of various kinds.

32 **Herbert, Ignaz, Baron von**, *Klagenfurt, Carinthia*—Manufacturer.

Orange and bright red lead.
Red and gold litharge.

[The lead mines of Carinthia supply a most pure and valuable description of lead, and are extensively worked, not merely to meet the home demand for that metal, but to supply the staple of a considerable foreign trade which has sprung up. Thus, whilst during a period of five years, from 1843 to 1847, the average yearly imports of lead ore amounted to 142 cwt., and those of raw lead to 22 cwt., and of cast and rolled lead to 26 cwt., the exports during the same interval averaged, respectively, 6,182 cwt., 2,672 cwt., and 1,288 cwt. The imports of litharge were inconsiderable, and the exports amounted to 1,800 cwt.]

33 **Diez, Ernst**, *Villach, Carinthia*—Manufacturer.

White lead of different kinds.

[The lead mine in the neighbourhood of Villach, in Carinthia, is a very extensive and productive one, and has been considered to be one of the largest sources of this metal in the Austrian empire.]

34 **Bigaglia, Pietro** (late **Lorenzo**), *Venice*—Manufacturer. (Agents, Fordati, Coxhead, & Co., 13 *Old Jewry Chambers, London.*)

Selected samples of white lead, litharge, and verdigris.

35 **Hardtmuth, Ludwig & Carl**, *Vienna*—Manufacturers.

Specimens of Naples yellow.
Various pieces of artificial pumice-stone.

36 **Schabas, Johann**, *Ottercräng, near Vienna*—Patentee.

Patent artificial pumice-stone of different kinds.

37 **Rohlik, Laurenz**, *Prague*—Inventor and Patentee.

Patent artificial Carrara marble, a new invention, particularly adapted for vases, candelabra, lustres, chandeliers, argentine lamps, drawing-room ornaments, furniture, and mosaic pavements.

38 **Cristofoli, Antonio**, *Padua*—Manufacturer.

Eight samples of paving blocks, and columns of artificial marble.

39 APOLLO CANDLE COMPANY, *Vienna.*
Stearine and stearine candles.

[The manufacture of stearine candles and soap, although the former was introduced only a few years ago into Austria, has already obtained an important position. Of the numerous manufactories established in this line in all parts of the empire, the most important have contributed to the Exhibition.]

40 MILLY CANDLE MANUFACTORY, *Vienna.*
Stearine and stearine candles.

41 PFITZNER & BECKERS, *Vienna*—Manufacturers and Patentees.
Candles, called palmatine candles (made by distilling palm oil).

42 STEARINE CANDLE COMPANY, *Hermannstadt, Transylvania.*
Stearine, and stearine candles.
Elaine soda soap.

43 CHIOZZA, CARL ALOIS, & SON, *Trieste*—Manufacturers.
A large assortment of soap of different kinds.

[The soap produced at Trieste is made chiefly from olive oil. The annual production of this oil amounts to 90,000 cwt., two-thirds of which are from Dalmatia, one-sixth from Lombardy, one-sixth from Görz, Gradisca, Istria, and Trieste. To this quantity must be added considerable imports from abroad. In the year 1847 they amounted to 234,411 cwt., against which were to be set some very inconsiderable exports. The manufacture of soap from olive oil has decreased considerably of late, and produces at present about 75,000 cwt.]

44 MELZER, DANIEL, *Hermannstadt, Transylvania*—Manufacturer.
Soap of different kinds, for bleaching, &c.
Washing soap.

44A RICHTER, ANTON, *Königsaal, Bohemia.*
Soap of various kinds.

45 CZEKELIUS, CARL, *Hermannstadt, Transylvania*—Manufacturer.
Candles of Transylvanian tallow.

[The production of tallow in the dominions of Austria amounted, on the average of the five years, 1843 to 1847, to 750,000 cwt. By its further manufacture into tallow and stearine candles, soap, &c., the raw material, after deducting from its aggregate the quantity used up in its raw state, attains an increased value of 25 per cent. The production of stearine candles amounts to 20,000 cwt.]

45A BACHRICH, JOHANN, *Vienna*—Manufacturer.
Specimens of prepared and unprepared agaric for German tinder. Amadou or German tinder fusees. Medicated agaric for rheumatism, and other similar complaints, and for linings of trousers, comforters, travelling caps, bandages, &c. Agaric styptic for cuts and wounds.

46 FÜRTH, BERNARD, *Schüttenhofen and Goldenkron, Bohemia*—Manufacturer. (Agent—Julius Lippmann, 29 Nicholas Lane, Lombard Street, London.)
Patent lucifer matches, of different kinds and forms.

[The manufacture of lucifer matches is constantly increasing. The excellent quality, the peculiar form, the cheapness of price, and the capability evinced by the makers of producing any quantity, have rendered these articles a manufacture of considerable importance. The manufacture affords employment for a great number of workmen, and bids fair to become a lucrative staple of export.]

47 POLLAK, A. M., *Vienna*—Manufacturer.
Patent lucifer matches, of different kinds and forms.

48 PRESHEL, F., & CO., *Vienna*—Manufacturer.
Patent lucifer matches, of different kinds and forms.

49 HOFFMANN, CARL & GUSTAV, *Wisoczan, near Prague, Bohemia*—Manufacturer.
Patent lucifer matches of different kinds and forms.

50 DE MAJO, SAMUEL, *Triesch, Moravia*—Manufacturer.
Patent lucifer matches of different kinds and forms.

51 DOLLESCHAL, JOSEPH, *Vienna*—Patentee.
Patent tincture, for destroying vermin.

52 WÜRTH, WILHELM EDLER VON, *Vienna*—Inventor and Patentee.
Material for stopping decayed teeth.

53 The DIRECTORS of the MINES of HIS HIGHNESS the PRINCE of LOBKOWITZ, DUKE OF RAUDNITZ, *Bilin, Bohemia.*
Magnesia and digestive lozenges (pastilles digestives de Bilin). Prepared from the contents of the mineral waters of Bilin.

54 HALLA & CO., *Prague*—Manufacturers.
Chemical powder, for making black writing-ink instantaneously.

55 ROBERT & CO., *Gross Soclowitz, Moravia*—Manufacturers.
Specimens of beet-root sugar.

[The manufacture of beet-root sugar, only established in Austria in the year 1830, has since widely spread.

The establishments have increased, not only in number, but also in extent, in a gratifying manner. The north Slavian Provinces, Bohemia, Moravia, Silesia and Galicia, as well as Hungary, are the principal seats of these important factories.]

56 MANUFACTORY OF THE BROTHERS CHEVALIERS DE NEUWALL, *Klobauk, Moravia*—Manufacturers.
Specimens of beet-root sugar.

57 RICHTER, ANTON, & CO., *Königsaal, Bohemia*—Manufacturers.
Specimens of beet-root sugar.

58 PRINCE FERDINAND VON LOBKOWITZ, *Bilin Bohemia*—Manufacturer.
Specimens of beet-root sugar.

[This branch of industry is divided into the refining of foreign sugars, and the manufacture and refining of sugar and syrup from materials of home growth. The Austrian monarchy can now reckon twenty-three refineries working up foreign sugars, which, in the year 1847, prepared 619,424 cwt. of raw sugar, so as to produce 495,539 cwt. of refined sugar, and 99,105 cwt. of syrup. Of the entire quantity there may be set down to the share of Lower Austria 158,300 cwt.; to the share of Venice 79,000 cwt.; of Carniola 57,000 cwt.; and to that of Lombardy 50,100 cwt. The proportion of sugar and syrup from materials of home growth increases annually in extent and consideration. The home-grown materials which are used in this preparation are prepared beet-root and potatoes; the latter in small quantities only. The number of sugar manufacturers is fifty-nine. Their joint production in 1847 amounted to 157,500 cwt. of raw sugar, for which production 3,148,000 cwt. of beet-root were consumed, and 3,000 cwt. of potatoes. The raw sugar produced furnished 130,000 cwt. of refined sugar, besides 20,000 cwt. of syrup.

Moravia and Silesia contributed 62,000 cwt. of raw sugar, Bohemia 53,000 cwt., and Galicia 26,000 cwt.; these provinces having the most important share in the manufacture.

It appears that this branch of the national industry of Austria furnishes a production, the value of which, taken altogether, was not less than twenty-six and one-third millions of florins. The quantity of refined sugar produced in Austria almost entirely covered the home demand, as the imports seem to be of little importance. They amounted in 1847 to no more than 4,400 cwt. On the other hand, in spite of the continued increase of the manufacture of sugar from beet-root, the importations of foreign raw sugar were also constantly on the increase.]

59 Larisch-Moennich, Count Heinrich, *Karwin, Moravia*—Manufacturer.
Sugar-candy manufactured from beet-root sugar.

60 Beet-root Sugar Manufactory, *Tlumacz, Galicia.*
Specimens of beet-root sugar.

61 Reali, Giuseppe (late Antonio Reali), *Venice.*
Four sugar-loaves.

62 The Privileged Steam Flour-Mill Company, *Vienna.*
Flour from Austrian wheat.

[The Austrian monarchy enjoys, by reason of its geographical position, a climate which is especially calculated for the support of animal and vegetable life; in addition to which it is favoured with an excellent soil, so that it is only here and there, in the mountainous districts, that some tracts of territory occur which are not adapted for agricultural cultivation.

The system of agriculture pursued in Lombardy is excellent; it is less so in the Venetian provinces and in South Tyrol. In emulation of Venice and Lombardy, the states of Bohemia and Silesia, of Upper and Lower Austria, and of Salzburg and Styria, have made unquestionable and praiseworthy exertions, although it is beyond question that in the three last-named provinces there occur large districts of dreary waste and desert; but even in the two favoured provinces alluded to there yet remain some difficulties to be overcome. Hungary and Galicia furnish agricultural products far beyond their requirements. Like Bohemia, Moravia and the Lombardo-Venetian provinces are able to export corn and other agricultural productions to other provinces in that neighbourhood, notwithstanding the density of their own population, which varies from 4,800 to 7,200 inhabitants per Austrian square mile; but how far the abolition of vassalage will have a tendency to increase the production cannot at present be at all anticipated. Agricultural labour throughout the monarchy yields in average years an aggregate of 278,000,000 of Lower Austrian "metzen" of grain. Of these 47,000,000 are wheat, 61,000,000 rye, 50,000,000 barley, 8,000,000 oats, 31,000,000 maize, 1,000,000 buckwheat. Of peas, the yield is more than 5,000,000 metzen; of potatoes, more than 100,000,000 metzen; of turnips, about 25,000,000; of hops, about 50,000 cwt.; of butter, cheese, and other dairy produce, about 3,000,000 cwt.

The manufacture of cheese is, especially in Lombardy, very considerable: the production is abundant and of excellent quality. It is an article which proves the staple of a large trade, and, next to silk, is the most important to Lombardy of her products.

The breed of cattle has not yet attained that perfection which it would be so much to the interest of Austrian husbandry that it should do, and which it really might be brought up to, when the extremely favourable condition of the soil on which it is reared is considered.]

63 The Privileged Steam Flour-Mill, *Fiume.*
Different kinds of flour from Hungarian wheat.

64 Steam Flour-Mill, *Smichow, near Prague.*
Different kinds of flour from Austrian wheat.

65 Hawranek, Carl, *Troja, near Prague.*
Different kinds of flour from Austrian wheat.

66 Nowotny, Anton, *Prague.*
Different kinds of flour from Austrian wheat.

67 Thun, Count Franz, *Tetschen, Bohemia.*
Different kinds of flour from Austrian wheat.

68 Jordan & Barber, *Tetschen on the Elbe, Bohemia.*
Different kinds of flour from Austrian wheat.

68a Razumovsky, Count Leo Von & Franz Gottfried Rietsch, *Böhmisch, Rudoletz, Moravia*—Inventor.
Grain stone (zeilithoid) for brewing with cold water by a quick process. This invention is said to be of great importance for shipping, as salt water once distilled can be used; it is also particularly suitable for warm climates. Beer can be made by this method of any strength, and the bitter of the hop is said to be retained for any length of time.

69 Imperial Tobacco Manufactories, *Vienna.*
Four kinds of snuff, produced in Galicia and Tyrol.

70 Carniolian Agricultural Society, *Laibach.*
Honey, chiefly collected by the bees from the blossoms of buck-wheat.

Winter linseed, from Carniola white and red millet.

Indian corn, grown in Upper Carniola, 400 fathoms above the level of the sea.

[The rearing of bees is carried on most extensively in the Vayvode and the Temeser Banate, Croatia, Slavonia, and Transylvania, on the military frontiers of Galicia, in Lombardy and Venice, and in Styria, likewise in Carinthia and Carniola. In the other provinces this trade is of little consequence or extent. The Germanic, Slavonic, and Italian provinces produce on an average 30,000 cwt. of wax, and the production of the other half of the Austrian empire may be of equal amount. Besides, the imports from abroad were rather greater than the exports, 4,075 cwt. having been in the year 1847 imported, and only 1,814 cwt. exported. The extensive manufacture of wax into candles has been falling off since the introduction of stearine candles, and is now almost limited to those for the use of churches. It has been calculated that wax, by its manufacture into various articles of use and ornament, candles, artificial flowers, &c., receives an increase of 50 per cent. value on the raw material.]

71 Chwalla, Anton, *Vienna*—Manufacturer.
Austrian trame of two and three filaments.

72 Scola, August, *Linz, Upper Austria.*
Raw unspun silk.

[Of all the states of Europe, the Austrian monarchy possesses the most abundant supply of silk. The production of silk is conducted on the most important scale in the Lombardo-Venetian kingdom. Next in order of importance comes the Tyrol. The same business is also carried on in the military frontier, Görz and Gradisca, and also in Istria and Trieste, in Dalmatia and the south of Hungary. Trials have likewise been made in Lower Austria, Bohemia, and Carniola. The production of cocoons amounts, on an average, annually—

In Lombardy	to 250,000 cwt.
The Province of Venice .	200,000 „
The Tyrol	28,000 „
The other provinces . .	12,000 „
Total . .	490,000 cwt.

Or, in round numbers, 500,000 cwt.

The cocoons are prepared at the reeling establishments into raw silk. From the result of inquiries it would appear that Lombardy comprises 3,068 reeling establishments, which employ 79,500 workpeople, without taking into calculation the smaller establishments, which are not included in this enumeration. The entire production amounts to 2,512,000 Vienna lbs.; and, since 12 lbs. of cocoons yield 1 lb. of raw silk, there are required for this aggregate of raw silk 306,400 cwt. of cocoons. The quantity of cocoons required in excess of the quantity produced, an excess of very nearly 50,000 cwt., is covered by the production of the Venetian provinces, chiefly by that of Verona.

Within the province of Venice the reeling establishments are pretty numerous, but of less extent. The nearest approximation to the truth in reference to this matter is obtained by taking the extent of the production at one-half of that in Lombardy. The remainder of the cocoons produced in the province undergo further preparation in Lombardy, and partly in the Tyrol also, whilst a portion of those obtained in Görz and Gradiska, as well as in Istria, are prepared in Venetian reeling establishments.

The number and the performances of the reeling machines in the Tyrol are accurately known. In the year 1848 South Tyrol contained 559 of such reeling establishments. These employed 13,000 hands, and turned out 265,700 lbs. of raw silk, from 31,900 Vienna cwt. of cocoons. The supply of cocoons required, beyond that furnished by the production of the country, was drawn from the Venetian provinces.

The reeling establishments in the remaining provinces produce, conjointly, from 10,000 cwt. of cocoons, 75,000 Vienna lbs. of raw silk.

The whole production of raw silk obtained in the Austrian monarchy is about 4,108,700 lbs. and the waste about 716,400 lbs. The number of working hands employed in the reeling establishments is not less than 160,000 (or if their term of occupation be reduced to 270 days in the year, 30,000 only). Besides the products already enumerated, about 900 cwt. of cocoons are annually imported into Lombardy, principally from Switzerland and the neighbouring Italian States, and are prepared in the Lombard reeling establishments. The quantity of silk produced is thus increased to an aggregate of 4,116,200 lbs.]

73 Stiermark Silkworm Breeding Association, *Gratz, Styria.*
Specimens of raw silk; illustration of the treatment of the silkworms.

74 Radulovits Brothers, *Weisskirchen, Hungary.*
Hungarian silk in skeins.

75 Lorenz, Aloys, *Weisskirchen, Hungary.*
Raw unspun silk from the Banate.

76 Herzog, Eva, *Werschetz, Hungary.*
Raw unspun silk from the Banate.

76a Kofler, Franz, Hermann & Co., *Tyrol.*
Various samples of floss silks.

77 Mattiuzzi, Giovanni Batt., *Varmo, Friuli.*
Samples of raw silk.

78 Senigaglia, Isaac, & Carminati, Giovanni B., *Palma, Friuli, Lumbardy.*
Specimens of raw silk.

79 Pappafava, —, *Zara, Dalmatia.*
Specimens of Dalmatian raw silk.

80 Scheibler & Co., *Milan*—Producer. (Agents, J. Stone & Co., 53 Old Broad Street, London.)
1. Six specimens of cocoons; A, yellow, coarse fibre: B, yellow, delicate; C, yellow, satin; D, yellow, saffron; E, white, coarse fibre; F, white, fine fibre. 2. Specimens of raw silk, one thread; raw silk, yellow and white. 3. Specimens of tram silk, three threads. 4. Specimens of organzine silk, for velvet, heavy and light satin and plush. 5. Specimens of grenadine: organzine grenadine, four threads. 6. Two qualities of grenadine manufactures. Looms, Messrs. Brevis Brothers.

[The raw silk undergoes further preparation in the throwing mills, but the whole mass of the production is not thus worked up within the monarchy, for the exports of raw silk are found considerably to exceed the imports. On an average of the five years, 1843 to 1847, the annual imports were 110,000 Vienna lbs. of raw silk (through Venice, Switzerland, and the adjacent Italian States), whilst 700,000 lbs. of this commodity were exported, for the most part to Switzerland, the adjacent states of Italy, and Southern Germany. Hence it results that a balance of raw silk, amounting to 589,000 lbs., have been taken off by foreign consumption, and that the other 3,518,800 Vienna lbs. are retained by the states of the monarchy, and more than two-thirds thereof are worked up in Lombardy. In 1817 that province reckoned 500 throwing-mills, with 1,239,000 spindles; and of these 702,100 were for spinning and 507,200 for twisting. In the throwing-mills themselves 12,000 hands were employed (namely, 4,400 men, 5,500 women, and 2,100 children), and, moreover, there were occupied 31,800 female winders. The production yielded was 989,000 Vienna lbs. of tram, and 1,189,700 lbs. of organzine, making together 2,179,500 Vienna lbs. of thrown silk: for this aggregate of production 2,256,200 lbs. of raw silk were used. The floss silk was to the weight of 76,000 lbs.

The working of the throwing mills of Venice produced, in proportion to those of Lombardy, almost similar results to those above indicated in reference to the reeling establishments; only the production of tram greatly preponderates. The number of persons employed in the throwing-mills, both within and without doors, were 20,000. Their production was above 960,000 Vienna lbs., and the consumption of raw silk by the conversion into this quantity was 1,009,000 lbs., giving waste (floss) to the amount of 47,400 lbs.

There are at present in the Tyrol 55 throwing-mills, with 125,047 spindles; 85,583 of which latter are for spinning and 39,464 for twisting. In these mills 500 men and 1,200 women and children are employed. The production there, including that of the smaller throwing-mills, which give occupation to 500 workmen, amounts to 220,400 Vienna lbs. of thrown silk, for which 231,400 Vienna lbs. of raw silk have to be worked up.

Of the remainder of the raw silk (23,200 lbs.) about 14,000 lbs. are distributed through the other southern provinces, and the remaining 9,200 lbs. appropriated to other purposes.

Thus we find a resulting total of production equal to 3,374,000 Vienna lbs. of thrown silk.

The further conversion of the thrown silk into silk goods is still confined almost exclusively to Vienna, Milan, and Como, whilst its working up into mixed stuffs has attained considerable extension. By far the greater portion of the thrown silk is, therefore, exported to foreign markets. From 1843 to 1847 these exports showed an annual average of 1,934,900 lbs. of thrown silk, of 142,700 lbs. of cleaned and dyed silk; so that there remained for home consumption about one-third of the entire production, or 1,296,300 lbs., because the imports were very inconsiderable.

More than one-half of this quantity is worked up in Vienna, and its manufacture, including the dyeing process, represents a very large capital. The consumption of silk in Vienna increases from year to year.

Milan may be classed immediately after Vienna, with reference to the value of its productions in this class. It appears that the cultivation and manufacture of silk in Austria show a gross resulting total of value of 59,000,000 of florins; and that they employ more than 800,000 persons, some for the whole year, some for shorter intervals, if the breeding of silkworms be also included. Of what importance to Austria the production of silk and silk goods must be is evident from the course of the trade in these articles, which occupy the highest place among the objects of Austrian commerce.]

81 Secchi, Francesco, *Milan.*
Samples of raw silk spun off with cold water.

82 Ronchetti, Pietro Ant., *Milan*—Manufacturer.
Samples of raw and spun silk.

83 Grassi, Dr. Giuseppe, *Milan.*
Diseased silkworms, cured by the exhibitor's method.

84 Querini, Giovanni, *Venice.*
Samples of raw silk.

85 Pari, Gera di, *Canegliano, Province of Treviso.*
Samples of raw silk.

86 Canossa, Marchioness Eleonora, *née* Muselli, *Verona*—Producer.
Samples of raw silk.

87 Steiner, G., & Sons, *Bergamo*—Manufacturers.
Samples of raw and spun silk.

87a Verza Brothers (late Carlo Verza), *Milan.*
Cocoons, raw and spun silk, silk fabrics.

88 Rossi, Giovanni Maria, *Sondrio.*
Samples of raw and spun silk.

89 Hunyady, Von Kitheley, Count Joseph, *Ürmény, Hungary*—Proprietor.
Sheep-wool in fleeces.

90 Figdor, Isaac, & Sons, *Vienna*—Merchants.
Hungarian and Austrian-Silesian sheep and lambs' wool.

[The manufacture of woollen goods constitutes an important branch of Austrian industry. It is of so much the greater importance, as it works up a raw material raised and supplied by Austria herself, in which, besides, she carries on a considerable trade, and which, being a native product, is not subject to the fluctuations that the supply of a raw material derived from foreign countries is always liable to.

The average production of wool in Austria amounts annually to about 700,000 cwt. Of this quantity about one-third (produced in Moravia, Silesia, and Bohemia, in part also from Galicia, Hungary, and Upper and Lower Austria) is of fine quality: one-half (drawn from Galicia, Hungary, and partly likewise from Transylvania) is of middling quality; the remainder, of an inferior sort, is grown in Hungary, Transylvania, and the southern provinces. To this estimate must be added a quantity of inferior kinds, which generally is of much about the same amount, imported chiefly from Turkey and the Danubian principalities: these imports amounted, on an average of the five years 1843 to 1847 (the years 1848 and 1849 having been years out of the usual course and condition, are not noticed here), to 57,000 cwt. annually; whilst the annual exports during the same period averaged 122,700 cwt. About 637,000 cwt. of wool remained, therefore, to be manufactured by Austrian industry.]

91 Von Mittrowsky, Count Anton, *Grossherrlitz, Silesia*—Proprietor.
Pure stock merino sheep-wool.

92 Larisch-Mœnnich, Count Heinrich, *Karwin, Silesia*—Proprietor.
Sheep-wool in fleeces.

93 Wallis, Olivier, Count Von, *Kolleschowitz, Bohemia*—Proprietor.
Washed and unwashed wool.
Bohemian hops.

94 Panna, N., & Alexis, J., *Cronstadt, Transylvania.*
Washed and unwashed Transylvania Zackel-sheep and lambs'-wool, and washed and unwashed Transylvania Zigaja-sheep and lambs'-wool.

95 Birnbaum, Jacob, *Pesth, Hungary*—Manufacturer.
Prepared Hungarian hemp for various purposes.

95a Privileged Linen Yarn Spinning Mill, *Schönberg, Moravia.*
Raw flax, heckled flax, and flax made therefrom.

96 Patent Flax Ratting Establishment, *Ullersdorf, near Schönberg, Moravia.*
Raw and heckled flax of the year 1850.

[The average production of flax within the monarchy amounts, exclusive of the growth of Hungary, the Vayvode, the Temeser Banate, Croatia, and Slavonia, as well as Transylvania, to 813,700 cwt., and that of hemp to 725,400 cwt. Of Hungary and Transylvania the annual production of flax is reckoned at 380,000 cwt., and of hemp at 500,000 cwt. The average crops, both as to flax and to hemp, may be taken as 1,200,000 cwt. of each. Of the flax, the distribution is to Galicia, 256,100 cwt.; to Bohemia, 178,800 cwt.; to Lombardy, 111,200 cwt.; to Moravia and Silesia, 64,200 cwt.; and to the Tyrol, 50,000 cwt. Of the hemp, to Galicia, 494,900 cwt.; to the Province of Venice, 59,600 cwt.; and to the Military Frontier, 57,150 cwt. They furnish 360,000 cwt. of clean flax, and 600,000 cwt. of tow, of clean hemp 360,000 cwt., with 480,000 cwt. of tow. These quantities, which ultimately undergo further manufacture, are, as to flax, scarcely at all affected by the course of trade with foreign countries; for, during the quinquennial period, 1843 to 1847, the average imports amounted to 15,900 cwt., and the exports to 19,400 cwt. Hemp, on the other hand, derives a considerable increase of quantity from the excess of the imports from abroad. During the same interval there were annually imported, on an average, 100,900 cwt., whilst only 34,700 cwt. were exported.]

97 Tomassia, Luigi, *Poggio, Lombardy*—Manufacturer.
Willow-straw for hats.

98 Rotsch & Reichel, *Gratz, Styria.*
Styrian teazles, for the woollen manufacture.

99 SCHÖFFL, JOSEPH, *Saaz, Bohemia*—Producer.
Hops from Saaz, Ausch, and Melnik, in Bohemia.

100 BATKA, WENZEL, *Prague, Bohemia*—Manufacturer.
Bohemian vegetable produce.
Medical plants and pharmaceutical productions.

101 REALI, GIUSEPPE (late Antonio Reali), *Venice.*
Bleached Venetian wax in grains.

102 MALVIEUX, C. J., *Pesth, Hungary*—Manufacturer.
Refined and unrefined rape-oil.

103 STEINBÖCK, A., *St. Georgen, near Mauthhausen, Upper Austria;* Agent, *No.* 5 *Denmark Street, Soho.*
Specimens of linseed oil, varnish, and Austrian and Moravian linseed.

105 SCHMID, H. D., *Vienna*—Manufacturer.
Steam-engine, with a paraboloidic regulator of new invention.
Model of a patent scale-beam.
Designs for beet-root sugar factories.

[The manufacture of machinery has only very recently become a part of Austrian industry, and already promises well. The superior quality of the raw material of the country affords to this branch most important advantages. Prime-movers, steam-engines, and locomotives are produced of excellent quality. Various circumstances, particularly the enormous freight, prevented the transmission of extensive contributions to the London Exhibition from this department.

The rapidly-increasing demand for machines, in consequence of the general development of Austrian industry, and the progress of railway constructions and of steam navigation, has of late years called into existence the business of the wholesale manufacture of machines. But this newly-created manufacture had to contend, at its outset, with great difficulties. The natural consequence has been, that engine builders have not yet reached that perfection which is to be desired, although they are already able to compete with foreign makers in some of the main or principal articles of their trade, and can now furnish steam-engines, machinery for direct use, planing-machines, grooving tools, spinning-mules, mills, cranes, spindles, pumps, &c. The larger steam-engines (which are coming into extensive use) are imported from abroad in a smaller number every year. For example, of the 136 steam-engines of 6,839-horse power, which was the number registered in 1846, 98 of 4,559-horse power in all were manufactured at home. At the close of the year 1846, 760 steam-engines, representing 24,734-horse power, were in work in the German, Slavonic, and Italian provinces, but the number has since considerably increased. Notwithstanding the improvement that has been made in this branch of industry, the importation of machines and parts of machines from year to year has gradually progressed.]

106 MILESI, ANGELO, *Verona*—Engineer.
Model of a double condensation steam-engine. Has been erected in Verona, in full size, and is in use.

106A OLDRINI, JOHANN, *Vienna.*
Model of an indigo mill. Model of an apparatus for printing yarn, &c., before weaving.

107 KNIERIM, FERDINAND, *Vienna.*
A carriage.

[The manufacture of carriages of different kinds is carried on in Vienna, Prague, Gratz, Milan, and also in several smaller places in Moravia and Bohemia.

Vienna furnishes very tasteful, serviceable, and cheap carriages of all kinds. The export of them to foreign parts is very considerable, and the already large manufacture is daily extending.

The Vienna carriage is characterised by its easy draught, elegant form, and the durability of its upholstery work, &c.]

108 LAURENZI, LUDWIG, *Vienna*—Coachmaker.
A four-seated calèche, on nine steel springs and patent axles.

109 THE HEIRS OF P. GAMBA, *Milan*—Manufacturers.
A Jacquard loom.

110 RIDLER, FERDINAND, *Spital-on-the-Pyhrn, Upper Austria*—Steel-worker.
Damascene steel.
Damascened swords and sword-blades.

111 PERGER, J., *Gratz, Styria*—Manufacturer.
A pair of pistols.

112 MEYER & Co., *Innspruck, Tyrol*—Manufacturers.
A Tyrolese rifle; exhibited for its superior qualities and cheapness.

113 SCHÖNHUBER, JOSEF, *Villach, Upper Carinthia*—Manufacturer.
A bolt rifle, propelling the bolt by means of a spring, on a new construction.

114 LEBEDA, A. V., *Prague*—Manufacturer.
A double-barrelled gun.
A Tyrolese rifle.
A pistol for target shooting.

115 NOWAK, FRANZ, *Prague*—Manufacturer.
A double-barrelled gun.
A pair of target pistols.

116 KEHLNER'S NEPHEW, A. CH., *Prague*—Manufacturer.
A pair of pistols for shooting at a target. The wood carvings by Mr. Worlinck, after drawings by Messrs. Marx and Seiberts.

117 PREIS, ANTON, *Prague*—Manufacturer.
An assortment of weapons, hangers, &c.

118 SCHAMAL, FRANZ, *Prague*—Manufacturer.
An air-pistol.

119 MICHELONI, GIOVANNI, *Milan*—Manufacturer.
Double-barrelled fowling-piece.

120 BUBENITSCEK, JOSEPH, *Hermannstadt, Transylvania*—Manufacturer.
A travelling-pouch, containing a hunting-knife, a pistol, knives and forks.

121 KIRNER, J., *Pesth, Hungary*—Manufacturer.
A double gun.

122 SELLIER & BELLOT, *Prague*—Manufacturers. (Agents, B. A. Grautoff & Co., 4 Lime Street Square, London.)
Patent percussion caps. The total manufacture of percussion-caps for sporting guns in Europe may be estimated at 1,300 millions yearly. Some idea of the importance of this article may be formed from the quantity of copper requisite for its production, viz., 396,000 lbs. weight. The great advantages of the percussion principle have been so generally acknowledged that within the short space of 20 years all kinds of guns with flint-locks have been abandoned, and the percussion system has likewise been extended to muskets for the army. The percussion-caps exhibited are stated to be remarkable for accuracy and equality of bore, for the malleability of the copper, and superior quality of the powder. The percussion-caps coated with varnish exhibited may remain in water

for 72 hours and more without losing their power of immediately igniting the powder.

Nipples (pistons) hermetically closed, a new invention, which prevents any moisture from penetrating between the percussion-caps and the nipple, and thus preserves the sportsman's powder perfectly dry.

Specimens of iron cylinders coated with cast-steel of superior hardness and solidity.

122A DIEZ, ERNST, *Villach, Carinthia.*

Shot and bullets.

123 HORSKY, FRANZ, *Libiegitz, Bohemia*—Patentee and Inventor.

A seed-harrow, a potato-cultivator, a drilling-machine, a turnip and weed eradicator, &c., the inventions of the exhibitor; manufactured at the iron-works of Count Stadion, at Josephsthal, Bohemia. Provisionally registered.

124 LOBKOWITZ, PRINCE FERDINAND VON, *Eisenberg, Bohemia*—Manufactory of Agricultural Implements.

A seed-harrow. A double-marker.
A seed-coverer. A seed-loosener.
A weed-destroyer. A sub-soil plough.

The inventions of the Chevalier von Infeld, of Eisenberg, manager of the works.

125 RIESE-STALLBURG, BARON WERNER FRIEDRICH VON, *Schlan, Bohemia*—Proprietor.

A carrot-driller.

126 MAGNI, GIOACCHINO, *Milan*—Proprietor.

An iron harrow.

127 PAJK, GEORG., Carpenter for the Carniolia Agricultural Society, *Laibach.*

Model of a Carniolian granary.
Model of a Carniolian bee-hive.

128 HOEPFNER, JOSEF, *Grottenhof, Styria*—Proprietor.

Model of a stand for cocoons.

129 PROKSCH, ANTON, *Görkau, Bohemia*—Inventor.

A knapsack, &c., of convenient construction.

130 MECHANICAL DEPARTMENT OF THE IMPERIAL POLYTECHNIC INSTITUTE, *Vienna.*

1. A universal Y level, telescope 15 lines aperture, and 20 times magnifying power, horizontal limb, with two verniers from 30 to 30 seconds; altitude circle, with verniers divided in single minutes on silver; micrometer screw, with divided head for measuring distance and altitude. Patented by Stampfer and Starke; in polished case.

2. A Y level, an instrument for measuring distance and altitude; patented by Stampfer and Starke; telescope 13 lines aperture, 15 times magnifying power, the eye-piece with machinery for accurate adjustment; limb divided by the vernier to single minutes on silver; horizontal clamping and horizontal adjustment, &c. In polished case, with lock and handle.

3. A level with fixed telescope, 16 lines aperture, 12 times magnifying power; limb divided at every minute on silver; horizontal clamping and horizontal slow motion. In polished case.

4. A level with fixed telescope, 11 lines aperture, 12 times magnifying power, eye-piece with machinery for accurate adjustment; oblique limb divided at every minute on silver; arrangement for measuring distance, &c., as above. In polished case.

5. A level without limb; telescope 11 lines aperture, 12 times magnifying power. In polished case.

6. A pocket level, weighing 10½ ounces, with telescope 6 times magnifying power.

7. A pocket levelling dioptric, with telescope without magnifying power.

8. A telescope lineal of novel construction, made very light, only weighing 1½ lb. In polished case.

9. A telescope lineal, patented by Stampfer and Starke. In polished case.

10. A universal level (theodolite) for mines; rectangular telescope, 11 lines aperture; horizontal and vertical limb, divided on silver by verniers from 30 to 30 seconds; arrangement for measuring distance and altitude, striding spirit level, &c. In case.

A dynamograph, for ascertaining the average strength of draught. Invented by Adam Chevalier de Burg, director of the Imperial Polytechnic Institute, Vienna.

[Mathematical instruments of good quality and at low prices are mostly made in Vienna, by a number of small working tradesmen, for the supply of the monarchy. A few specimens of the larger surveying instruments are, however, exhibited.

Optical instruments are likewise produced principally in Vienna, of superior quality, particularly those which serve more for purposes of general utility than for science. Opera-glasses and similar articles of the utmost excellence, as well as spectacles and eye-glasses, of all descriptions and mountings, are made in Vienna by a great number of tradesmen. The glasses come mostly from Bohemian manufactories, but are cut in Vienna. No sample of this department has been sent.

Of the philosophical instruments, only a few specimens have been forwarded.]

131 RIEDL VON LEUENSTERN, J., *Vienna*—Inventor.

Globe of the moon.

132 ZIBERMAYR, M., *Gratz, Styria*—Inventor.

Chronoglobium and planetarium.

133 BRANDEIS, R. W., *Prague*—Manufacturer.

Saccharometrical apparatus for trying beer, designed by Mr. C. J. N. Balling, Professor of Chemistry, of Prague.

134 JERAK, FRANZ, *Prague*—Manufacturer.

Philosophical, chemical, and medical apparatus and instruments.

Works of art in glass.

135 BATKA, WENZEL, *Prague*—Manufacturer.

Chemical and philosophical apparatus.

An electro-magnetic apparatus, by Prof. Petrina, Prague.

An apparatus for trying beer, after the design of Dr. Steinheil, of Vienna.

136 ROCCHETTI, PAOLO, *Padua*—Engineer.

Geometrical instruments.

137 WURM, FRANZ XAVER, *Vienna*—Engineer

Pyrometer for discovering the degree of heat: a new invention.

Patent furnace bar, new invention. Provisionally registered.

Artificial feet and arms.
Iron-wire rope.

138 ZWICKL, JOSEPH, *Atzgersdorf, near Vienna*—Manufacturer.

An instrument for measuring concave surfaces.

139 MARCHESI, GIO. B., *Lodi*—Inventor.

A writing machine for the blind, producing the letters either black or in relief.

140 SCHNEIDER, JOSEPH, *Vienna*—Manufacturer.

Grand pianoforte of American maple, 7 octaves, with Viennese mechanism, ornamented with inlaid-work.

[The excellence and extent of the musical department in Austria are the natural consequences of the fondness of its inhabitants for music, and the extensive demand for musical instruments resulting therefrom.

Vienna and Prague are the principal seats of the manufacture of stringed and wind instruments, which are celebrated for purity of tone and cheapness, and are consequently articles of considerable export. Also in other parts of Bohemia and the Archduchy of Austria, and in Lombardy, excellent musical instruments are made.

The Vienna pianoforte is considered to possess a full and beautiful tone, easy touch, elegant and light shape. The manufacturers endeavoured to adapt the mechanism of the instruments to the taste of the various countries. The few specimens in the Exhibition deserve attention, also for the tasteful cabinet-work of the cases.

Besides Vienna, at Prague, Gratz, Presburg, and other places in Austria, pianofortes of equally good quality are manufactured.

Harmonicons, both large and small, the latter of which are rather to be considered as toys, are extensively made in Vienna of good quality, and are largely exported. Musical boxes from Prague are also exported in large quantities.]

141 Vlasky, Johann, *Prague*—Manufacturer.
A pianoforte, 7 octaves, of walnut-tree wood.

141a Pottje, J., *Vienna*—Manufacturer.
Grand pianoforte of rosewood, with carved ornaments, seven octaves; Vienna mechanism.

141b Seuffert, E., *Vienna*—Manufacturer.
Piccolo pianoforte of rosewood, with buhl-work and transposition mechanism, from designs of the architect, Bernardo de Bernardis, in Vienna. The bronze ornaments by A. Hollenbach, Vienna.

141c Hoxa, F., *Vienna*—Manufacturer.
Grand pianoforte, seven octaves, with brass string-plate, and the strings attached to separate iron tongues; the case of Hungarian poplar.

141d Deutschmann, J., *Vienna*—Manufacturer.
A melodium.

142 Wilhelm, Anton, *Mödling, near Vienna*—Manufacturer.
Leather for covering the hammers of pianofortes.

143 Bienert, D., & Son, *Maderhäuser, Bohemia*—Manufacturers. (Agent, Mr. Holste, 76 Basinghall Street, London.)
Different kinds of prepared wood for musical instruments.

144 Bittner, David, *Vienna*—Manufacturer.
A stringed quartett (two violins, tenor, and violoncello). A violin, a bass-viol, and a guitar.

145 Kosselt, Johann, *Turnau, Bohemia*—Manufacturer.
A violoncello, inlaid with mother-of-pearl.

146 Herzlieb, F., *Gratz, Styria*—Manufacturer.
A stringed quartett (two violins, tenor, and violoncello).

147 Ceruti, Enrico, *Cremona*—Manufacturer.
A violin.

148 Kiendl, Anton, *Vienna*—Manufacturer.
Two citherns (stringed instruments).

149 Huther, Michael, *Vienna*—Manufacturer.
A cithern (a stringed instrument).

150 Callegari, Antonio (firm of Antonio Prial detto Romanin & Co.), *Padua*—Manufacturer.
An assortment of strings for musical instruments, including violin, violoncello, double bass, harps, &c., and specimens of cat-gut.

151 Indri, Antonio, *Venice*—Manufacturer.
Samples of strings for guitar, violin, violoncello, harp, and double bass.

152 Hell, Ferdinand, *Vienna*—Manufacturer.
Musical instruments: a clarionet, cornet-à-pistons, bugle, bass-tuba, trumpet, euphonion horn, and a bass instrument, a new invention, called Hell's horn.

152a Theisz, S., *Hermannstadt, Transylvania*—Manufacturer.
A French horn and fife.

153 Riedl's Widow, J. F., *Vienna*—Manufacturer.
Various wind instruments of metal.

154 Stehle, Johann, *Vienna*—Manufacturer.
Harmonic bass (a new instrument) and a bassoon.

155 Uhlmann, Joseph, *Vienna*—Manufacturer.
Various wind instruments of wood and metal.

156 Ziegler, Johann, *Vienna*—Manufacturer.
Flutes and clarionet.

157 Cerveny, W. F., *Königgrätz, Bohemia*—Patentee.
Various wind instruments of metal; among them a new phonikon horn, called Zevuhoroh.

158 Rott, A. H., *Prague*—Manufacturer.
Various wind instruments of metal.

159 Rott, Vincenz, Josef, *Prague*—Manufacturer.
Various wind and stringed instruments.

160 Stöhr, Franz, *Prague*—Manufacturer.
Wind instruments: euphonion and bugle.

161 Pelitti, Giuseppe, *Milan*—Manufacturer.
Wind instruments of metal, of novel construction.

162 Rzebitschek, F., *Prague*—Manufacturer.
Four musical-boxes, playing two, three, four, and six tunes.

163 Reinisch, Joseph, *Vienna*—Manufacturer.
Different kinds of harmonicons and mouth-organs.

164 Steinkellner, C., *Vienna*—Manufacturer.
Different kinds of accordions.

164a Laudacher, *Franz, Linz, Upper Austria.*
Church clock.

165 Liszt, Anton, *Vienna.*
Two travelling clocks.

[Vienna, Prague, and Gratz are the principal seats of this industry. In the former place particularly, the construction of clocks is carried on extensively by a numerous class of small manufacturers. The Vienna clocks in glazed wooden cases, the metal clocks called Black Forest, or Schwarzwälder, clocks, and the small clocks (Nippuhren) on bronze or porcelain stands, and under glass shades, have become considerable export articles—the former on account of their excellence, the latter owing to their appearance and cheapness.

Church clocks, astronomical clocks, travelling clocks, and also watches, are of superior workmanship.]

166 Marenzeller, Ignaz, *Vienna*—Clockmaker.
A chronometer of novel construction.

167 Ratzenhofer, J. F., *Vienna*—Clockmaker.
A geographical clock, showing the difference of mean time in all the capitals of Europe, from a design by B. di Bernardis.

168 SCHUBERT, ANTON, *Vienna*—Clockmaker.

Different kinds of clocks; including bracket, table, and small toilet clocks.

169 KRÁLIK, S., *Pesth, Hungary*—Clockmaker.

A travelling clock with 13 escapements.
A gold cylinder watch.

170 ZELISKO, AUGUST, *Prague*—Clockmaker.

A pendulum clock, going a twelvemonth, jewelled socket and escapement.

170A ANDERWALT, PASQUALE, *Trieste* and 5 *Vine Street, Regent Street*—Manufacturer.

Three pendulum clocks, Nos. 1 and 2, moved by the disengagement of hydrogen gas, which renews, at stated times, their winding up. No. 1 will go for 30 years, and No. 2 for 20 years, without ever requiring to be wound up. They may be wound up for a century, without alteration in dimensions or form. No. 3, a barometrical clock, constantly winds itself up by the pressure of the atmosphere on quicksilver. Provisionally registered.

171 CHIACHICH, MICHAEL, *Fiume*—Spinner.

Specimens of cotton yarn.

[Cotton-spinning and weaving have of late years been greatly on the increase in Austria, owing to the demand for home consumption. Bohemia, Lower Austria, and Voralberg, in the Tyrol, contain most of the spinning-mills; Bohemia has by far the greatest number of establishments for weaving and printing. The erection of power-looms has not been extensive, the greatest part of the articles produced being woven by hand by the inhabitants of the Bohemian mountain-frontier districts. The production of cotton yarn and goods has increased of late years in a measure which bears no proportion to the small number of the samples exhibited.]

172 GRILLMAYER, JOHANN, *Linz, Upper Austria*—Spinner.

Specimens of cotton yarn.

173 HIRSCHEL & MINERBI, *Haidenschaft, Illyria.*

White cotton warp yarn.
Red-dyed cotton mule yarn.

173A LENSSEN, JULIUS, *Tischnowitz, Bohemia*—

Red cotton yarn.

174 PERGER, JOSEF, *Hirtenberg*—Spinner.

Cotton yarn in various stages of manufacture.

175 PORDENONE COTTON MILL AND DYEING ESTABLISHMENT, *near Venice.*

Samples of cotton twist, dyed Turkey red.

176 RICHTER, FRANZ, *Smichow, near Prague, Bohemia*—Spinner.

Yarn spun from Mobile cotton.

[The cotton manufacture gives employment the whole year round to hundreds of thousands of individuals; but no other branch is subject to such fluctuations, and these are occasioned, in the first place, by the necessity for drawing the supply of the raw material from abroad. The rapid development of the cotton manufacture is shown in the clearest manner by the quantities imported at given periods. On an average of the five years, 1843 to 1847, they had increased to 403,100 cwt. In the year 1846 they had reached 447,300 cwt., and had thus within 18 years increased sevenfold. The exports of cotton were unimportant, amounting on an average to about 1,700 cwt. only a year: so that the whole quantity imported may be considered as entering for manufacture into the home consumption of the Austrian monarchy.

The first process in the preparation of the cotton takes place in the spinning-mills. In the year 1847 the Austrian monarchy contained 206 spinning-mills, with 6,125 spinning machines, and 1,421,986 spindles. These, however, are very unequally distributed over the several provinces. The greatest number of spindles was possessed by Lower Austria, which could reckon 528,916, most of them in the neighbourhood of Vienna, and by Bohemia which had 448,368. Next in order was the Tyrol, which could count 195,410 (these almost exclusively in the Vorarlberg), then Lombardy, with 104,473 spindles, and Upper Austria with 64,489. In the other provinces, spinning mills occur but sparingly, here and there.

The entire stock of cotton of all these mills was, at the beginning of 1849, about 52,659 cwt., and they supplied themselves in the course of that year, to the further extent of 499,012 cwt. Their total production for the same year, of cotton yarn and twist, was 397,240 cwt.

There were employed directly in the spinning mills nearly 30,000 workpeople; but the number indirectly employed being large, this amount is thereby raised to about 50,000 hands.]

176A DIERZERS' HEIRS, JOHANN, *Theresinthal, near Gmunden, Upper Austria.*

Specimens of cotton yarn.

177 FRÖHLICH'S SONS, G. A., *Warnsdorf, Bohemia*—Manufacturers.

Cotton velvet of different kinds, dyed and printed. White flannel.

178 GROHMANN, CARL, *Lindenau, Bohemia*—Manufacturer.

Cotton yarn, dyed Turkey red and pink.
Cotton velvet and calico, dyed Turkey red.

179 LANGE, FRANZ, & SONS, *St. Georgenthal, Bohemia*—Manufacturers.

Cotton velvets of different kinds.

180 WINTER, JOSEPH, *Vienna*—Manufacturer.

Quilted bed-covers.

181 EHINGER, ALBERT, *Oberlangenau, near [illegible], Bohemia*—Manufacturer and Bleacher.

Various cotton goods. Jaconets, handkerchiefs, &c.

182 FRIEDRICH, ANDREAS, *Vienna*—Manufacturer.

Various cotton goods, shirtings, muslins, thibets, &c.

[In addition to the yarn of Austrian production, considerable quantities of the finest yarns are annually imported from abroad. In the five years, from 1843 to 1847, there were imported annually 41,787 cwt., whereas no more than 1,464 cwt. were exported annually during the same interval.

The weaving, in by far the greatest proportion, pertains to the domestic industry of the monarchy, the number of the more extensive establishments being very small. It is followed most extensively in Bohemia, where it employs 180,000 people. Moravia and Silesia come next with regard to the extent to which this occupation is followed, although but one single cotton spinning-mill exists in them (and that only since 1818): in these provinces 40,000 persons earn a subsistence by weaving. In Lower Austria, and especially in Vienna, mixed stuffs particularly are manufactured, and this is, to some extent, the case in Upper Austria also. In Styria, Illyria, Galicia, and in the province of Venice, the cotton manufacture is but inconsiderable. In the Tyrol (the Vorarlberg) the yarn produced is not worked, but is principally sent to Lombardy, Bohemia, Moravia, and Austria. The cotton weaving of Lombardy is of more importance, although at present, with the exception of the mixed stuffs, an ordinary fabric only is produced there. In Dalmatia and in the Military Frontier this branch of industry can scarcely be said to be carried on at all; and Hungary, together with the Vayvode and the Tameser Banate, Transylvania, Croatia, and Slavonia, produce but common stuffs, for which the neighbouring Austrian provinces furnish the principal supply of yarn; for the averages of the five years last referred to show that 14,728 cwt. of yarn were exported thither, whereas the imports from thence amounted only to 594 cwt. The number of hands engaged in the occupation of cotton-weaving amounts to 300,000.]

183 Jenny & Schindler, *Hard, Vorarlberg*—Manufacturers.
Furnitures. Cloths.
Ladies' dresses (all wool).
Ladies' and children's scarfs.

184 Klamer, Johann, *Vienna*—Manufacturer.
Ladies' muslin dresses, plain and embroidered; striped cotton, and muslin handkerchiefs.

185 Lang, Johann, *Vienna*—Manufacturer.
Specimens of fine cambric muslin.

186 Leitenberger, Eduard, *Reichstadt, Bohemia*—Manufacturer.
Plain and assorted coloured cotton prints, printed by cylinder and hand.
Jaconets, cambrics, muslins of different colours.

187 Leitenberger, Franz, *Cosmanos, Bohemia*—Manufacturer.
Plain and variously-coloured cotton prints, printed by cylinder, hand, or perrotine.
Coloured jaconets, cambrics, muslins, and printed shirtings.

188 Liebisch, Johann, *Warnsdorf, Bohemia*—Manufacturer.
Quilting for waistcoats.

189 Ossberger's Successor, Peter, *Markt Zwell, Lower Austria*—Manufacturer.
Samples of cotton goods, various colours, glazed.

190 Volkmann, Ignaz, *Vienna*—Manufacturer.
Ladies' fancy cotton dresses.
Specimen of Ajor curtain.

191 Keller, Josef, *Brünn, Moravia*—Spinner.
Twelve specimens of woollen yarns.

192 Leidenfrost, Eduard, *Brünn, Moravia*—Spinner.
Woollen yarns of various colours.

193 Schmieger, Anton, *Neudeck, Bohemia*—Manufacturer and Spinner.
Worsted and woollen yarns.
Woollen fabrics, including thibets, muslin, cloth, &c.

194 Soxhlet, H. F. & E., *Brünn, Moravia*—Spinners.
Woollen yarns.

195 Tetzner, Gustav, *Görkau, near Comotau, Bohemia*—Spinner.
Woollen yarns.
Vigogna yarns, spun of wool and cotton.

196 Thomas, Leopold, *Graslitz, Bohemia*—Manufacturer.
Worsted and woollen yarn.
Woollen stuffs: Thibet, ladies' cloth, lama, half-wool tartans.

[The production of wool and woollens is a most important branch of industry, and its export trade is only exceeded by that of silk goods. The raw material of which, besides a large quantity exported, is entirely of home growth. Nearly half the wool of Austria is Hungarian; next in importance are Bohemia, Galicia, Moravia, Silesia, Transylvania, Upper and Lower Austria. The woollen yarns are usually spun in the cloth manufactories, and several spinning-mills have been lately established.

The shawls, which are manufactured almost exclusively at Vienna, combine durability and tastefulness with cheapness, and have long been extensive export articles.

Some specimens of woollens mixed with cotton, silk, and thread, as well as carpets and similar articles, are exhibited.]

196a Dierzer's Heirs, Johann, *Theresienthal, near Gmunden, Upper Austria.*
Worsted yarn.

197 Thum, Anton, *Reichenberg, Bohemia*—Manufacturer.
Worsted and woollen yarns.
Woollen goods, including Thibets, Circassia, Orleans, and waistcoats.
Printed cashmere and Circassia shawls.

[The woollen manufacture is most extensively diffused, and the raw material receives its greatest increase in value in Silesia, where 230,000 cwt., in Bohemia, where 150,000 cwt., and in Lower Austria, where 40,000 cwt. are annually worked up. With less enhancement of value wool finds a considerable consumption in Hungary, amounting, together with that of the Vayvode, the Temeser Banate, Croatia, and Slavonia, to 100,000 cwt.; also in Transylvania which takes 40,000 cwt., and on the Military Frontier, which absorbs 20,000 cwt. In the other provinces of the empire the manufacture is carried on upon a smaller scale, their consumption being about equal to their production; but Galicia and the Bukowina constitute an exception to this remark, for these scarcely work up one-tenth part of their production of the raw material; and, with regard to its enhancement in value, they will probably stand between the first-named province and Hungary (excepting, however, Dalmatia, which furnishes only the commonest articles). Among the particular towns, Reichenberg, Brünn, Vienna, Iglau, and Bielitz stand in the first class of producers of woollen goods. Vienna manufactures scarcely any cloths, whereas in the other localities both cloths and other woollen goods are extensively made.

The manufacture of worsted yarns is not adequate to supply the requirements of the monarchy. It is most considerable in Bohemia. Altogether about 10,000 cwt. of worsted yarn are wound off 30,000 spindles from 25,000 cwt. of wool. The imports of worsted yarn are almost exclusively furnished from Saxony and brought into Bohemia; on an average of the same quinquennial period last referred to, they amounted to 12,900 cwt.

Thus there remained for woollen yarn and hand spinning about 600,000 cwt. of raw material. Of this quantity something more than the half, or about 350,000 cwt. were spun, for the most part in Moravia, Silesia, Bohemia, and Lower Austria, by machinery on 550,000 spindles into 250,000 cwt. of yarn; the remainder, representing a value of 18 millions of florins, is hand-spun.]

198 Vöslau Worsted Yarn Spinning Company, *Vöslau, near Vienna.*
Berlin wool, worsted yarns, and arras yarns.

199 Kamner, George T., *Cronstadt, Transylvania*—Weaver.
White sheep's wool and blue striped rugs.
Black and white cloths (called Gujoratz cloth).

200 **Maurer, Vinzenz**, *Iglau, Bohemia*—Manufacturer.
Horse-cloths, rugs, and counterpane.

201 **Matschuko, Nicolaus**, *Cronstadt, Transylvania.*
Long-haired winter rugs of various colours.

202 **Tartler, Michael**, *Cronstadt, Transylvania*—Manufacturer.
Various druggets and toilette cover.

203 **Wrchovszky, J. R.**, *Skalitz, Hungary*—Manufacturer.
Woollen bolting-cloth.

204 **Auspitz, L.**, *Brünn, Moravia*—Manufacturer.
Fine cloths, cassimere, satins, and elastics.

205 **Bauer, Theodor, & Co.**, *Brünn, Moravia*—Manufacturers.
Specimen of woollen cloths.

206 **Biedermann, M. L., & Co.**, *Teltsch, Moravia*—Manufacturers. (Agent, S. Reuter, Moorgate Street Chambers, London.)
Fine cloths, cassimere, and doeskin.

207 **Binder, Traugott**, *Hermannstadt, Transylvania*—Manufacturer.
Specimens of blue and grey doeskins.

208 **Fürler, Franz**, *Gratz, Styria*—Manufacturer.
Broad-cloths and Styrian beavers (Azors) of various colours.

209 **Gács Cloth Manufactory**, *Gács, Hungary.*
A variety of cloths and doeskins.

210 **Ginzel, B. C.**, *Reichenberg, Bohemia*—Manufacturer.
Specimens of cloth, including black Peruvian cloth.

211 **Gürtler, Josef**, *Brünn, Moravia*—Manufacturer.
Woollen trouserings.

212 **Hartig, Josef**, *Reichenberg, Bohemia*—Manufacturer.
Drab Peruvian cloths.

213 **Brünn Trade-Union**, *Brünn, Moravia.*
Woollens, cloths, summer buckskins and trouserings.

214 **Cloth-Weavers' Association**, *Hermannstadt, Transylvania.*
An assortment of cloths and flannels.

215 **Honauer, Franz**, *Linz, Upper Austria*—Manufacturer.
Woollens. Velveteens. Plush. Camlets. Harpins. Buntings.
Turkish and Wallachian belts.

216 **Illek, Franz**, *Brünn, Moravia*—Manufacturer.
Samples of cloth and doeskin.

217 **Miess, George**, *Cronstadt, Transylvania*—Weaver.
White cloth, for Hallina cloaks.

218 **Moro Brothers**, *Klagenfurt, Carinthia*—Manufacturers.
Cloth of the finest quality for uniforms.

219 **Müller, A. L.**, *Reichenberg, Bohemia*—Manufacturer.
An assortment of woollen checks.

220 **Namiest Cloth Company**, *Namiest, Moravia.*
Fine cloths, Peruvians, doeskins, and cassimeres.

221 **Offermann, Johann Henrich**, *Brünn, Moravia*—Manufacturer.
Fine cloths and trouserings.
Stuffs for summer and winter coats.

222 **Popper Brothers**, *Brünn, Moravia*—Manufacturers.
Fine cloths, Peruvians, doeskin, and zepherienne trouserings.

223 **Passelt, Anton**, jun., *Reichenberg, Bohemia*—Manufacturer.
Samples of cloth, doeskin, and cassimere.

223a **Posselt, Anton**, *Reichenberg, Bohemia*—Manufacturer.
Blue-black cloth.

224 **Schmieger, Johann**, *Brünn*—Manufacturer.
Woollens and stuffs for winter coats.

225 **Schmitt, F.**, *Aicha, Bohemia*—Manufacturer.
Woollen cloths of different kinds.

226 **Schöll, August**, *Brünn, Moravia*—Manufacturer.
Fine cloths, Brazilian, elastic, cassimeres, doeskin, summer, and winter stuffs.

227 **Schoeller Brothers**, *Brünn, Moravia*—Manufacturers.
Fine cloths, Brazilians, elastics, Peruvians, & Americans.
Winter and summer trouserings.

228 **Seidel, C. & C.**, *Kratzau, Bohemia*—Manufacturers.
Woollens, cassimeres, Orleans, and Alpacas.

229 **Siegmund, Neuhäuser & Co.**, *Reichenberg, Bohemia*—Manufacturers.
Fine cloths, Brazilian, beavers, elastics, and Peruvians.

230 **Siegmund, Wilhelm**, *Reichenberg, Bohemia*—Manufacturer
Fine cloths, beavers, and ladies' cloths.
Woollen stuffs, including Orleans, mohairs, rips, mandarins, and Austrians.
Woollen shawls. Shawls composed of wool and silk.

[Stuffs for which worsted yarn is principally employed are made in greater quantity in Bohemia, Lower Austria, Moravia, and Silesia. These amount annually to 700,000 pieces, weighing 60,000 cwt. The quantity of wool absorbed in their production is 70,000 cwt. In combination with these goods we must take the manufacture of shawls and scarfs, hosiery and Turkish caps, for which, in addition to wool, cotton, linen yarn, and silk are required. The manufacture of shawls and scarfs constitutes an especial branch of industry in Vienna, and embodies a value of some 3½ million florins. The manufacture of hosiery is largely carried on in Bohemia The manufacture of Fez caps also amounts to a large yearly sum.

From careful calculations it results that this great branch of national industry employs 170,000 persons, exclusive of those employed in the production of wool. Of these 170,000 individuals 50,000 labour in the manufactories, and comprise—

10,000 weavers,
6,400 clothworkers and shearers,
6,000 spinners,
2,200 stocking-weavers,
1,200 rug and carpet weavers,
400 millers.

The remaining 23,800 consist of journeymen, apprentices, and labourers.

231 **Stepanek, Franz**, *Bruck-on-the-Mur, Styria*—Manufacturer.
Cloths and Styrian beavers.

232 **Steffens, Peter**, *Goldenkron, near Budweis, Bohemia*—Manufacturer.
Cloths, cassimeres, and buckskins.

233 Strakosch, S., & Son, *Brünn, Moravia*—Manufacturers.
Ladies' woollen cloakings.
Trouserings.

234 Trenkler, Anton, & Sons, *Reichenberg, Bohemia*—Manufacturers.
Cloth and Peruvians.

235 Tschörner, Josef, jun., *Reichenberg, Bohemia*—Manufacturer.
Olio cloth.

236 Ullrich, Anton, jun., *Reichenberg, Bohemia*—Manufacturer.
Cloths and Peruvians.

237 Vonwiller & Co., *Haslach and Senftenberg, Bohemia*—Manufacturers.
Cloth, Peruvians, and trouserings.

238 Schmitt's (J. M.) Heirs, & Co., *Neugedein, Bohemia*—Manufacturers.
Thibets, Cashmeres, camlets, fustians, &c.
Circassian and plaid shawls, scarfs, &c.

239 Bossi, Joseph, *St. Veit, near Vienna*—Manufacturer.
Cashmere and printed shawls, scarfs, and dresses.

240 Bracht, F. W., *Vienna*—Manufacturer.
An assortment of woollen and half-woollen prints for ladies' dresses. Balzarine dresses.
Woollen and barège shawls, handkerchiefs, and scarfs.

241 Liebig, Franz, *Reichenberg, Bohemia*—Manufacturer.
Printed Thibet and Circassian handkerchiefs, neckcloths, and scarfs. Table-covers.

242 Winter, Joseph, *Vienna*; *Tuppadl, Bohemia*; and *Trebitsch, Moravia*—Manufacturer.
Ladies' printed dresses; half-woollen stuffs.

243 Haas, Philipp, & Sons, *near Vienna*—Manufacturers.
Utrecht velvet carpets. Table-covers.

244 Dierzer's (Johann) Heirs, *Kleinmünchen, near Linz*—Manufacturers.
Carpets of different sizes and colours.

244a Prochaska, W., *Prague*—Tailor.
Two patchwork table-covers.

245 Salzer, Carl, *Vienna*—Dyer.
Samples of dyed silk of various colours.

[The raw material of this important branch of Austrian industry is chiefly produced in the Lombardo-Venetian provinces and the Tyrol. In Hungary, and the Military Frontiers, also, the silkworm-breeding, for years fostered by Government, has met with great success, and the silk produced, which is of a good quality, is largely exported.

The manufacture of silk goods is chiefly carried on in Vienna, Milan, and Como, and there are also various manufactories in the smaller towns of Lower Austria and the Tyrol. With the exception of a few very fine articles, they supply the home-market entirely, and export large quantities, especially of the lighter descriptions of goods.]

246 Messat, Anton, *Vienna*—Manufacturer.
A large assortment of silk ribbons.

247 Moering, Carl, *Vienna*—Manufacturer.
Figured gros de Naples ribbons and satin ribbons.

248 Pfeningberger, Josef, *Vienna*—Manufacturer.
Silk ribbons of various kinds.

249 Backhausen, Carl & Johann, *Vienna*—Manufacturers.
Half-silks for ladies' dresses.

250 Bader Brothers, *Vienna*—Manufacturers.
Silks, ladies' scarfs, dresses, and handkerchiefs.

251 Blaha & Rosenberger, *Vienna*—Manufacturers.
Figured satin, white silk waiscoating, and velvet.

252 Bujatti, Franz, *Vienna*—Manufacturer.
Silk furnitures and damasks. Carriage linings.
Silk brocades for ecclesiastical vestments.
Silk hangings, counterpanes, handkerchiefs, satin, &c.

253 Dorfleuthner, Leopold, *Vienna*—Manufacturer.
Half-silks and silks, ladies' dresses, satin, velvet, &c.

254 Flemmich, Anton, *Vienna*—Manufacturer.
Figured silk for dresses.

255 Fries, Anton, & Zeppezauer, *Vienna*—Manufacturer.
Silk for dresses. Ecclesiastical brocades. Silk tapestry. Damasks. Satins. Ladies' scarfs.

256 Ganser, J., *Vienna*—Manufacturer.
Transparent silk gauze.

257 Giani, Joseph, *Vienna*—Manufacturer.
Silks and half-silks. Ecclesiastical brocades and damasks.

258 Gruber, M., & Enzinger Brothers, *Vienna*—Manufacturers.
Silks. Satins. Gros de Naples. Shawls.

259 Haas, Philipp, & Sons, *Vienna*—Manufacturers.
Silks and half-silks, damasks, furnitures, velvets, and lampasses.

260 Hell, Georg, *Vienna*—Manufacturer.
Silk furnitures, in brocatelle. Lampasses. Satin. Damasks. Velvet.

261 Herzig, Joh., & Son, *Vienna*—Manufacturers.
Figured silk for dresses, damasks, &c.

262 Hornbostel, C. G., & Co., *Vienna*—Manufacturers.
Silks.
Silk velvet bayadere handkerchiefs; ladies' dresses; barège shawls.
Printed foulards. The stuff made on self-acting water-looms, and printed by Gustav König in Vienna.

263 Krickl, Ernst, *Vienna*—Manufacturer.
Ecclesiastical vestments.
Infula of real cloth of silver, embroidered with gold.
Casula of silk velvet, embroidered with gold and silver.
Vestment of cloth of silver, embroidered with gold.

264 Kostner, Albert, *Vienna*—Manufacturer.
Ecclesiastical brocades, embroidered in gold and silver, on silk and chenille. Ecclesiastical vestments.

265 Lemann, Jos., & Son, *Vienna*—Manufacturers.
Tapestry. Pall, ornamented with real gold. Veils.
Ecclesiastical brocades.
Ecclesiastical vestments, embroidered with gold, silver, and imitation metal, on silk and chenille.

266 Mayer Brothers, *Vienna*—Manufacturers.
Silk, velvet, and other waistcoatings.
Satin scarfs, neckcloths, and handkerchiefs.

267 Mestrozi, Paul, *Vienna*—Manufacturer.
Ladies' silk handkerchiefs.
Satin and velvet waistcoatings.

268 Reichert, Franz, *Vienna*—Manufacturer.
Silks. Gros de Naples; gros grain; gros d'Afrique; Levantin and satin Turque.

269 Schipper, Carl, *Vienna*—Manufacturer.
Silk plush for hats.

270 Schopper, M. A., *Vienna*—Manufacturer.
An extensive selection of silk for furniture, in brocatelles, lampas, satins, and damasks.
Carriage linings.

271 Siebert, Friedrich, *Vienna*—Manufacturer and Patentee.
Chenille handkerchiefs and bayaderes.

272 Sigmund, Ignaz, *Vienna*—Manufacturer.
Silk lawn; transparent gauze; and bayaderes.

273 Spanraft, F. X., *Vienna*—Manufacturer.
Plain and brocaded silk handkerchiefs.
Ladies' scarfs and shawls.

274 Wojtech, Franz, *Vienna*—Manufacturer.
Fancy silk goods, waistcoatings, satin scarfs, &c.

275 Hiellen, Elias (Sons of the late), *Schönlinde, Bohemia*—Manufacturers.
Sewing, crochet, and knitting thread.
Linen.

[Although the ancient and, in former times, flourishing linen trade of Austria has suffered greatly by the introduction and progress of the cotton manufacture, and spinning by machinery, it still occupies an important position; and the linen of the mountain districts of Bohemia, Moravia, Silesia, and Salzburg is of undeniable excellence. The Government is also constantly exerting its influence for the improvement of the growing and preparation of flax.

Among the hemp manufactures, of which specimens have been sent, some are distinguished by their novelty, as, for example, variegated coloured hemp thread for ladies' fancy work, frequently preferred to silk.

The linen yarns of Austria are mostly hand-spun: machine-spinning is, however, on the increase. Samples are exhibited both of hand and machine spun yarns.]

276 Tauber, Ferd., *Unter-Meidling, near Vienna*—Manufacturer.
Tow-thread, coloured, of various kinds.

277 Rope-makers' Association, *Hermannstadt, Transylvania.*
Manufactures of hemp and flax, including girths, cordage, &c.

277a Hermannstadt Trade Union (Binder, T., Director), *Hermannstadt, Transylvania.*
Cotton and linen cloth, waistcoat quilting, flax thread trousering, bleached and unbleached linen.

278 Jager, Franz Johann, *Prague, Bohemia*—Manufacturer.
Cordage.
Carpet of Italian hemp, and one of New Zealand hemp.
Saddle-girths, halters, bridles, &c.
Bell-ropes of New Zealand hemp (*Phormium tenax*).

279 Parsch Brothers, *Graupen, Bohemia*—Manufacturers.
Water-hose of Bohemian hemp, for fire-engines.

280 Weinberger, Gottlieb, *Linz*—Manufacturer.
Hemp manufactures, covered with lasting wools; saddle-girths; lines; twisted cords; twines; various cordages from hemp; twine from German hemp.

281 Butschek & Graff, *Brünn, Moravia*—Manufacturers.
Sail-cloth of different kinds, spun and wove in the same manufactory.

282 Chiachich, Michele, *Fiume*—Manufacturer.
Sail-cloth of different kinds.

283 The Benevolent Society's Establishment, *Milan.*
Three table-cloths and a piece of Lombardy linen.

284 Ferie, Wenzel, *Merklow, near Starkenbach, Bohemia.*
Hand-spun linen yarn.
Fine cambric of linen thread, spun by inhabitants of the Riesengebirge, Bohemia.
Ladies' linen pocket-handkerchiefs.

[The oldest of all the branches of Austrian industry is the linen manufacture. It is, moreover, the most important of them, and continues to be so, intrinsically, on account of the extraordinary large number of persons whom it employs, part of them throughout the whole year, part of them for a shorter time; but it has suffered severely by the rapid development of the cotton manufacture, which, availing itself of the working powers that had been already organized by the linen manufacture, employed them far more profitably. The linen manufacture suffers, however, still more sensibly from the circumstance that the necessary degree of care is not devoted to the important object of getting rid of defects of preparation and management which are universally acknowledged to exist under the present system. These defects extend even to the production of the raw material; for the cultivation of flax and hemp is carried on in Austria as if it were but a subsidiary or secondary object, it being deemed not sufficiently remunerative. A raw material, however, of excellent quality is produced. The flax, especially that grown in Bohemia, Moravia, and Silesia, is equal to the best produced in any other part of Europe; but, from the careless steeping it receives, it loses enormously in value: large portions of it are partially spoiled, and the waste of the general production is unnecessarily increased. As yet, moreover, machine-spinning has not attained any very considerable degree of development, and the hand-spinning, which affords but a scanty and precarious living, supplies in general but an imperfect and irregular article.]

285 Harrach, Count, *Janowitz, Moravia, and Starkenbach, Bohemia*—Manufacturer.
Linen damask furniture.
Damask table-cloths and napkins.
Linen towels.
Linen handkerchiefs. Linen web.

286 Haupt, Leopold, *Brünn, Moravia*—Manufacturer.
Specimens of common and damask linen; mixed fabrics; striped and coloured cloths; various ticks; and unbleached white yarn linen.

287 **Mathie, Joh.**, *Haslach, Upper Austria*—Manufacturer.
Linen table-cloths, towels, and napkins.

288 **Peldrian's (Franz) Heirs**, *Hohenelbe, Bohemia*—Manufacturers.
Linen yarns, hand-spun.
Linen of different kinds, grass-bleached. Linen web.
Pocket-handkerchiefs.

[A portion, more or less considerable, of the time of three millions and a half of individuals is employed in spinning, so that on an average it is found that each of these persons spins 29 lbs. of yarn, a product for which 75 days' labour is requisite. If the number of working days in the year be taken at 270, it will follow that more than two millions of persons find employment in this occupation throughout the year. The average daily earnings, however, of each person thus occupied do not exceed 2½ kreuzers, even if the whole increase of value be considered as wages.

The above-mentioned quantities of yarn do not meet the whole demand for the manufacture of woven goods, thread, knitted articles, and hosiery; and the imports, both of fine yarn and of tow yarn, exceed the exports. The half elaborated raw material, which is subjected to ultimate processes of manufacture, amounts to 1,153,000 cwt., whereof 636,500 cwt. are tow yarn.]

289 **Petrak, Josef**, *Branna, Bohemia*—Manufacturer.
Prepared flax.
Linen yarn, raw and prepared.
Linen pocket handkerchiefs.

290 **Siegl, Johann, & Co.**, *Schönberg, Moravia*—Manufacturers and Bleachers.
Bleached dowlas and web, of all widths and lengths, of the best hand-spun and machine yarn.

291 **Simonetta, Peter**, *Helfenberg, near Linz*—Manufacturer.
Web linen table-cloths.
Dowlas, all linen and half linen.
Damasks. Waistcoatings.
Half-woollen stuffs, lamas, wool and cotton.
Rough, fine, and mixed drills.

[The manufacture of linens is carried on in Bohemia, Moravia, Silesia, and Galicia on the largest scale. Of the entire productions about five-twelfths are brought into the market, and of this quantity the bulk must be of domestic manufacture, since few great linen manufactories exist in Austria. Among the linen fabrics, table-cloths and napkins, veils, cambrics, dimities, twills, and drills are important articles. In the next rank we must place the manufacture of thread, especially in Bohemia, Moravia, and Lombardy. The tape manufacture is of less consequence; and as to the business of dyeing and printing, that has been almost entirely absorbed by the cotton manufacture, and is now in requisition for thread and handkerchiefs only.

As the loss resulting from the processes of weaving, bleaching, &c., is estimated at about 10 per cent., the net aggregate of our manufactures of linen, thread, &c., may be assumed at, say, 1,037,000 cwt., of which quantity about 450,000 cwt. come into the market, the rest being absorbed by domestic consumption. Since, upon an average of the five years, 1843 to 1847, there appear to have been imported from abroad only 242 cwt., whereas the average of exports for the same period shows 42,609 cwt., it follows that there remained for home consumption about one million cwt. Thus, on a population of 38,000,000 of persons, about 2⅔ lbs. would fall to the share of each; but this estimate falls much below the truth, when we consider that the national costume in Hungary and Galicia requires more than double the quantity we have allowed above. In fact, the crop of flax is estimated to be 10 per cent. higher than is given in the official reports; but the consumption of even 3 lbs. per head, which would thus result, is yet smaller than in reality it must be. In the imperial army the quantity used up annually by each man averages more than 7 lbs.

In the above statistics of the manufacture of linen goods no allowance has been made for the extensive production of rope-work and the like.]

292 **Vonwiller & Co.**, *Haslach and Senftenberg, Upper Austria*—Manufacturers.
Mixed cotton and linen, drills, and rips. Linen gingham and handkerchiefs.

293 **Witschl & Reinisch**, *Warnsdorf, Bohemia*—Manufacturers.
Figured linen trouserings. Nankeens.
White waistcoatings, of various patterns.
Gambroon linings. Crapes, drills, &c.

294 **Blaschka & Co.**, *Liebenau, Bohemia*—Manufacturers.
Woollens. Orleans, various colours, figured and plain.
Silk and plain rips, coloured.
Lastings. Thibet handkerchiefs.
Printed shawls. Circassian shawls.

295 **Bruder's Widow, Rudolph**, *Vienna*—Manufacturer.
Ladies' figured dresses.
Long shawls; woollen bayaderes.
Cashmere waistcoatings; gentlemen's scarfs.

296 **Fürst, Josef**, *Vienna*—Manufacturer.
Fancy stuffs, including ladies' half silk dresses.
Fine, middling, and figured cotton dresses.
Figured half woollen cloaks.
Scarfs, half and entirely of wool, for ladies and gentlemen.
Printed cotton handkerchiefs.

297 **Kroitzsch, M.**, *Aussig on the Elbe, Bohemia*—Manufacturer.
Cloth of wool and cotton, alpacas, poils de chèvre, &c.

[The manufacture of mixed stuffs seems to require special mention, because the materials employed usually experience a higher ratio of increased value in the process than they do when incorporated into articles manufactured from one raw material only. This manufacture of mixed stuffs is most important in Bohemia, Lower Austria, Moravia, Silesia, Lombardy, Galicia, and Upper Austria. Bohemia finds employment, in the manufacture of her fabrics of cotton and linen yarn, for nearly 2,000 looms; in those of cotton and woollen yarn, for nearly 8,000 looms; of linen and woollen yarns, for about 300 looms; of linen, cotton, and woollen yarns, for 200; of different yarns, combined with silk, for 200 looms. In Lower Austria the stuffs which are composed of cotton and woollen yarns and those which are mixed with silk stand first on the scale of relative importance. In Moravia and Silesia the stuffs of cotton and linen yarn, those of mixed cotton, linen, and woollen yarn, and those of cotton, linen, and woollen yarns and silk combined, are of the most consequence. In Lombardy the mixture of silk is the character of the predominant manufacture. Galicia confines herself to the manufacture of half linens, made of cotton and flax or hempen yarn. In Austria likewise these half linens (composed of cotton and flax yarn), and trouserings, made of cotton and woollen yarns, are of much importance. The mixture of cotton yarn and silk (for waistcoatings and furniture) may rank next to them.]

298 **Liebig, Johann**, *Reichenberg, Bohemia*—Manufacturer.
An assortment of plain and figured printed woollen stuffs, comprising Orleans, Thibet, lasting, mandarin, &c.
Winter shawls, printed Thibets, &c.

299 **Neubert, C. G.**, *Georgswalde, Bohemia*—Manufacturer.
Balzarine, challis, pergalin, muslin, and mixed fabrics, prepared for printing.

300 **Rameder, Ignaz**, *Vienna*—Manufacturer.
Woollen shawls; petticoats; counterpanes.

301 **Wolfrum, C.**, *Aussig on the Elbe, Bohemia*—Manufacturer.
Cotton and woollen stuffs, including victorines, poile de chèvre, imperials, allhambras, fil de chèvre, &c.

302 **Würst, Johann N.**, *Freudenthal, Silesia*—Manufacturer.
Table-covers, in various colours and styles of workmanship.

303 **Bienert, Florian**, *Vienna*—Manufacturer.
A variety of waistcoatings.

304 **Echinger Brothers**, *Vienna*—Manufacturers.
Waistcoatings and woollen scarfs for gentlemen.

305 **Kral, Anton**, *Vienna*—Manufacturer.
Waistcoatings of various kinds.

306 **Rockstroh, Heinrich**, *Vienna*—Manufacturer.
Waistcoatings of wool, and wool and silk.

307 **Fial, Johann**, *Vienna*—Manufacturer.
Waistcoatings of wool, and of half silk.

308 **Westhausser, Josef**, *Vienna*—Manufacturer.
Waistcoatings of piqué and wool.

309 **Berger, Josef**, *Vienna*—Manufacturer.
Ramage, long, and a variety of other shawls.

310 **Brotzman, Adam**, *Vienna*—Manufacturer.
Tapis and ramage shawls of various colours.
Long shawls.

311 **Haydter, Sebastian**, *Vienna*—Manufacturer.
Ramage and long shawls of various colours.

312 **Kubo's Son, Johann**, *Vienna*—Manufacturer.
Tapis and ramage shawls.
Long and Thibet shawls. Table-covers, &c.

313 **Martinek, Johann**, *Vienna*—Manufacturer.
Tapis and ramage shawls.
Long shawls.

314 **Mogel, Nikolaus**, *Vienna*—Manufacturer.
An assortment of shawls.

315 **Reinhold, Wilhelm**, *Vienna*—Manufacturer.
Tapis and ramage shawls.
Long and Cashmere shawls.

316 **Riss, Josef**, *Vienna*—Manufacturer.
Ramage and long shawls.

318 **Schindl, Andreas**, *Vienna*—Manufacturer.
Shawl-handkerchiefs and long shawls.

319 **Wenzel, Karl**, *Vienna*—Manufacturer.
Fancy woollen and cotton shawls.
Shawls for mourning.

320 **Zeisel, J., & Blumel, J. & C.**, *Vienna*—Manufacturers.
Large assortment of shawls, shawl-handkerchiefs, long shawls and scarfs.

321 **Messner, Friedrich**, *Reutte, Tyrol*—Manufacturer.
Brown calf-skin.
Brown and black cow-hide, for waterproof boots.

322 **Pollak, J. J., & Sons**, *Prague, Bohemia*—Patentees and Manufacturers.
Brown, black, pressed, and grained calf-skin.
Black japanned calf and sheep-skin.
Black japanned grained sheep-skin.
Chamois dressed sheep-skin.

[The production of leather is an object of indispensable importance, and occupies a very prominent place among the branches of Austrian industry. It is an incontrovertible fact that the manufacture of leather, like the other great divisions through which the industry of Austria is distributed, has lately struck into a path of progress and improvement—especially as regards the tawing and the production of japanned and chamois leather, which are cheap and excellent. Bark tanning, on the contrary, has hitherto succeeded to a very small extent only in freeing itself from the disadvantages of the old system of procedure, and in its attempts to furnish an article which can compete at all with the Rhenish, Belgian, French, and English descriptions of sole and upper leather.

With respect to the raw material—the hides and skins—the domestic cattle reared in the interior of the monarchy, together with the considerable quantities that are furnished from abroad—especially from across the eastern frontiers and from Switzerland—are not by any means adequate to meet the annual requirements of Austria for her home manufacture.

The imports of raw and half-prepared hides and skins constitute an important part of the trade carried on by Austria. In the following statement of this trade, the division of the different descriptions of skins is taken according to the customs' tariff. The larger hides are employed, generally speaking, for the manufacture of sole leather. The smaller skins, which are mentioned in the second class, serve, with the exception of the calf-skins (which are for the most part bark-tanned), as the raw material for "tawing" and chamois tanning. The last skins mentioned, not under any particular name, are those which, partly in their rough state, partly as leather, have a special but limited application.

With respect to the localities from whence the raw material is derived for the Austrian leather manufacturers, two-thirds of the larger hides, afterwards worked up, come from Russia, from the Danubian Principalities, and from Turkey. The remaining third of this aggregate is imported by sea, as Buenos Ayres hides, which last are principally manufactured in Lombardy and Venice into excellent sole-leather, far exceeding in quality the productions of the other Austrian provinces. Two-thirds of the smaller skins come from Turkey, and among these must be included those sheep-skins which are obtained from the flocks that are pastured in Transylvania, but which winter in Bulgaria. The remainder come principally from Albania and Greece by way of Trieste.

The annual quantity of raw material for the leather manufacture, including that imported, amounts to about 952,000 cwt.

In the manufacture of leather of all kinds, 198 masters, with 5,000 labourers, and nearly 4,000 leather-dressers and curriers, are employed—but this number does not include those engaged in the same occupations in Hungary.

Vienna alone, in its immediate neighbourhood, reckons eight of the largest leather establishments, and 95 tanyards, in which the processes of tanning are carried out on a very large scale.

With respect to the extent of this trade, the establishments at Prague in Bohemia, at Brünn in Moravia, Wilhelmsburg and Krems in Lower Austria, at Reutter in the Tyrol, at Milan, and at Venice, take the greatest share in this productive branch of Austrian industry. In Hungary, the largest seats of the leather manufacture are at Pesth-Ofen and Presburg. Tanning is very actively carried on in Transylvania at Hermannstadt, and among the Szeklers, who especially lay themselves out for the preparation of morocco leather, and pursue that branch with great success. The production of leather of all descriptions in Austria is calculated to amount annually to 545,000 cwt. Although the demand for alum and chamois, tanned and japanned, or enamelled leather, is perfectly covered by the home manufacture, so that the exports and the imports pretty nearly balance one another, this is not the case with Russia leather and leather prepared with wood dyes.]

324 Seykora, Joseph, *Adler Kostelec, Bohemia*—Manufacturer.
Cow-leather, tanned with pine bark.

325 Suess, A. H., *Vienna*—Manufacturer.
Brown calf-skin, japanned calf-skin, calf and sheep skin, and kid leather in various colours for fancy articles.
Sheep-skin for furniture covering.

326 Wollff, Friedrich, *Hermannstadt, Transylvania*—Currier.
Japanned goat and sheep skins of various colours.
Calf-skins.
Coloured goat-skins.

327 Christl, Joseph, *Vienna*—Manufacturer.
Gentlemen's boots and shoes, waterproof shooting-boots. Boots with cork and wood-pegged soles, and with hollow heels.

328 Frank, J., *Vienna*—Patentee.
Patent boots soled with a newly-invented material.

329 Langer, Joseph, *Vienna*—Manufacturer.
Gentlemen's boots and shoes.

330 Shoemakers' Association, *Hermannstadt, Transylvania.*
Shoes and boots (called Tschiszmen) belonging to the Saxon and Romanian national costume.

331 Helia, Johann, *Vienna*—Manufacturer.
Ladies' shoes, boots, and slippers.

332 Friedl, Leopold, *Vienna*—Manufacturer.
Ladies' shoes, over-shoes, and half-boots with pegged soles.

[Of the modes of manufacturing leather, those which regard the covering of the human feet are maintained in the greatest extent, and employ more than 60,000 shoemakers, with a number of assistants almost as large. But the manufacture of such articles ranks among the smaller trades only, and is confined as it were to home uses, with the exception of ladies' shoes manufactured in Vienna, which are known to be excellent, and, on account of the elegance of their make and their moderate price, find an extensive sale abroad. Besides these, a considerable export of shoes takes place from Trieste, which are designed for various markets in the Levant. In the southern provinces of Hungary a very large quantity of shoes and slippers is made for sale in Turkey, and in the military provinces many laced boots are annually manufactured.]

333 Kunerth, Anton, *Vienna*—Manufacturer.
Ladies' shoes. Velvet slippers with gold embroidery.
Gentlemen's shoes. Over-shoes.

334 Boulogne, P., *Prague, Bohemia*—Manufacturer.
Kid and lamb skins for glovers.

335 Jaquemar, Franz, *Vienna*—Manufacturer.
Gloves for ladies and gentlemen.

[The making of ladies' leather gloves is a branch of trade extensively followed in Vienna and Prague. The production of this branch not only covers the entire demands of the home market, but furnishes also large exports to the Danubian provinces and to Turkey. In Vienna alone there are established more than 250 glovemakers, some of whom carry on their business on a very large scale. They employ above 500 workmen and nearly 3,500 female sewers, who furnish annually more than 180,000 dozen pairs of gloves. Prague reckons about 50 manufacturers of gloves.]

336 Glovers' Association, *Prague, Bohemia.*
Ladies and gentlemen's gloves of kid, lamb, and sheep skin.
Gentlemen's gloves of rein-deer leather.

337 Portschest Leather-cutters, *Hermannstadt, Transylvania*—Manufacturer.
Sheep-skin, goat, and kid leather.

338 Gellinek, Johann, *Prague, Bohemia*—Manufacturer.
A set of silver-plated harness.

339 Löffler, Friedrich, *Prague, Bohemia*—Manufacturer.
Saddles of various kinds. Saddle-tree for horses, with curved back.

340 Zapf, Ignatz, *Vienna*—Patentee and Manufacturer.
Various saddles, girths, bridles, and horse-rugs, &c.

[The manufacture of fancy articles of leather has made great progress of late years. This has been the case particularly in the trade of bookbinding, both in Vienna and Prague, where this branch of trade is conducted on a large scale: these not only satisfying all the requisitions of a daily increasing luxury at home, but also commanding a very profitable sale abroad. In the manufacture of harness, saddles, and various articles of furriery, Vienna, Prague, and Milan, excel all other cities and towns in the empire. In fact, the parties engaged in this branch of manufacture not only supply the whole demand of the monarchy, but also export largely annually to foreign countries, principally to Turkey.]

341 **Griess, Friedrich**, *Vienna*—Manufacturer.
Riding and other whips, with buttons and handles of silver, ivory, whalebone, horn, &c.

342 **Manschön, M. F.**, *Pesth, Hungary*—Manufacturer.
Hungarian Csikós whip.

343 **Groskopf, Georg**, *Vienna*—Manufacturer.
Travelling trunk and hunting-pouches.

344 **Einhauser, Josef**, *Uderns, Tyrol*—Leathercutter.
Leather reticule, embroidered with peacock feathers. Tyrolese hunting-pouches, gun-slings, and belts.

345 **Leather-cutters' Association**, *Hermannstadt, Transylvania.*
A belt.

346 **Geyer, J.**, *Pesth, Hungary*—Furrier. (Agent, Mr. J. G. Mayer, 58 Oxford Street, London.)
Hungarian sheep-skin Bunda (a cloak).

347 **Associated Furriers**, *Hermannstadt, Transylvania.*
Black lamb-skins.
Wallachian and Heltau fur stomachers and vest.

348 **Dinzl, Franz**, *Vienna*—Manufacturer.
Gutta percha articles, including sticks, riding-whips, snuff-boxes, goblets, flower-pots, &c.

349 **Lang, Franz**, *Stadt-Steyr, Upper Austria*—Manufacturer.
Artists' brushes of various kinds.

350 **Pattak, Georg**, *Hermannstadt, Transylvania*—Manufacturer.
Horse-brush.
Clothes and hair brushes.

351 **Bayer, J. Georg**, *Hermannstadt, Transylvania*—Hatter.
Felt cloth, dark brown; scarlet and black for waistcoats and caps; and materials for making felt.

352 **Hübsch, Jos.**, *Prague, Bohemia*—Manufacturer.
Bohemian silk and felt hats.

353 **Krise, Carl**, *Prague, Bohemia*—Manufacturer.
Felt and silk hats.
Thibet mechanical hats.

354 **Muck, Joseph**, *Prague, Bohemia*—Manufacturer.
Silk and felt hats and bonnets, of various kinds.
Felt shoes and boots.
Samples of coloured felt cloth.

355 **Srba, Anton**, *Prague, Bohemia*—Manufacturer.
Felt and silk hats; waterproof military hats; shooting hats of wool and felt.

[The manufacture of felt hats is carried on by upwards of 3,000 dealers in these articles, not including those of Hungary. Very few establishments for hat-making are carried on upon a large scale; and Vienna and Prague are the principal seats of the manufacturers both of felt and of beaver hats. Milan produces silk hats in large quantities, and of excellent quality. Of late years the production of fine felt hats in the Germanic Austrian provinces has fallen off, while the manufacture of silk hats after the Parisian manner is making great progress.]

356 **Benedig, Josef**, *Strassisch, Carniola, Krainburg*—Manufacturer.
Horse-hair sieve-bottoms of various kinds.
Cylindrical sieve-bottoms, for paper manufactories.

[Sieve-bottoms are made in Illyria in considerable quantities at very moderate prices, and of good quality. They are principally exported; and chiefly to Italy, France, the Netherlands, Spain, Gibraltar, Servia, Bosnia, &c.]

357 **Globotschnig, Anton**, *Strassisch, Carniola*—Manufacturer.
Horse-hair sieve-bottoms, of various kinds.
Cylindrical sieve-bottoms, for paper manufactories.

358 **Locker, D'Antonio**, *Krainburg, Carniola*—Manufacturer.
Horse-hair sieve-bottoms of various kinds.
Cylindrical sieve-bottoms, for paper manufactories.

359 **Pfeningberger, Josef**, *Heiligenstadt, Vienna*—Manufacturer.
Oil-cloths, made of figured fustians and cottons. Table-covers to resemble wood. Floor-cloths. Carriage carpets.

360 **Smith & Meynier**, *Fiume*—Manufacturers.
White printing, drawing, writing, foolscap, and letter papers, of various kinds.
Coloured papers.

[It is only of late years that the paper manufacture, although belonging to the oldest branches of industry subsisting in the Austrian monarchy, has by reason of the introduction of mechanical power made any considerable progress, and at the same time partially supplanted the smaller establishments.

Lombardy, Lower Austria, and Bohemia occupy, among the provinces of the Austrian monarchy, the first rank in the manufacture of paper. After them come Venice and the Tyrol. In the other provinces the paper factories are for the most part but of small extent; Dalmatia has none whatever. Lower Austria possesses the most extensive paper manufactories. The average production of the monarchy amounts to 650,000 cwt. of paper. Of this quantity 250,000 cwt. are ordinary writing paper; 60,000 cwt. fine paper; 20,000 cwt. drawing paper; 150,000 cwt. printing paper; 100,000 cwt. packing paper; and 60,000 cwt. paper for technical purposes. As to the various sorts or kinds of paper, Bohemia and Lower Austria produce the most writing paper; Lombardy and Bohemia, fine paper; Lombardy, drawing paper; Lower Austria and Bohemia, printing paper; Lombardy and Venice, packing paper; and Bohemia and Lombardy, paper for technical purposes.

The manufacture of paper employs directly 12,000 people, and indirectly at the least as many more. The mills are driven by water power, with the exception of some few to which steam power and machinery have been applied. Two-fifths of the whole production are made by machine, and three-fifths by hand.]

361 **Eggerth, Joh.**, *Stubenbach, Schüttenhofen, Bohemia*—Manufacturer.
Packing paper (flannel paper), of a peculiar kind, to be used in packing mirrors or glasses, by laying it between the same instead of strips of cloth.

362 Imperial Court and Government Printing Office, *Vienna*.

Specimens of typography and printing of all descriptions.

[Called upon by the State to undertake the printing for all the Ministries, for Government and the Courts of Justice, for the Army, Post-Office, Customs, &c., as well as to execute its bonds and paper money, securely, quickly, and agreeably to all practical requirements, this establishment has likewise aimed at cultivating and perfecting the graphic arts, and thereby rendering important services to art and science. The union within its walls of all the different branches of the graphic arts, tending to the multiplication of words or pictures, is the point which distinguishes this Institution from all others of a similar nature.

The greatest portion of this work is for the use of the Government offices; but in cases where artists or men of learning can find no publishers for their works, or where such works, on account of the difficulty and expense of their execution, could not be produced in any other establishment, but deserve support in the interests of art and science, with consent of the Ministry, leave is given to have them brought to light by the extensive resources of the State printing office. By the liberality of the Austrian Government, the charges in such cases are fixed on a very moderate scale, and their liquidation is allowed to take place gradually, in the course of several years, by the sale of the work itself, which will have had time to become known.]

Punch-cutting Department.—Steel punches of foreign characters only. Of these the Imperial establishment possesses 104 alphabets of the languages of the whole globe, without reckoning the different sizes in which many of the alphabets have been cast.

Punches of types used for books printed in the middle age, from the sixth to the sixteenth century inclusive. Types for the use of the blind of Europe and Asia. The alphabets are as follows:—

Hieroglyphic
Hieratic
Demotic
Ethiopic and Amharic
Himyaritic
Himyaritic (ornamented)
Cabylic, American inscript., Touaric and Thugga
Ancient Hebrew
Samaritan
Hebrew
Raschi, or Rabbinic
German Hebrew
German Raschi
Hebrew, Spanish-Levantine
Aramaic
Chaldee
Palmyric
Estrangelo
Syriac
Cufic
Arabic, Neschi
Mauritanic
Phenician
Phenician (ornamented)
Punic
Numidian
Etrurian
Ancient Italian
Runic
Gothic
Celtic
Celtic (new shape)
Anglo-Saxon
Ancient Greek
Greek
Coptic
Ciryllic
Ciryllic (differently shaped)
Russian, Servian, Wallachian
Glagolitic
Albanian
Albanian (differently shaped)
Lycian
Armenian
Georgian
Georgian (ecclesiast. letters)
Persepolitan (cuneiform letters)
Pehlevi
Zend
Cabool
Peguan
Oldest Indian signs
Western Grotto inscription
Açoka inscription
Inscription of Guzerat
Dynasty of Gupta (Allahabad)
Bengali
Ahom
Tibetan
Passepa
Kutila (ten years after Christ)
Devanagari (Sanscr. No. 1)
Devanagari (Sanscr. No. 2)
Kashmerian
Sikh
Assam inscript.
Mahratta
Orissa
Gujeratee
Kayti-Nagari
Randscha
Bandschin-Mola
Multan
Sindhee
Nerbudda
Kistna
Telinga
Karnata
Tamul
Malayalim
Cingalese
Maldivian
Javanese
Kiousa
New Pali (No. 1)
New Pali (No. 2)
Siamese
Kamboga (with joints and without)
Laos
Birmese
Shyan
Bugis
Bisaya
Batta
Tagala
Mongolese
Mandschu
Chinese
Coreanic
Formosan
Japanese (Katakana, No. 1)
Japanese (Katakana, No. 2)
Japanese (Firokana)
Tschirokisian

Xylography. — Three large woodcuts, after religious historical drawings by Führich, together with impressions of them in gutta percha, and matrices produced by means of the galvanic process; also specimens of historical and several other representations. A collection of seals, and several woodcuts after Albrecht Dürer.

Chemitypy.—Representations of the different departments of the Imperial establishment, etched on zinc, chemityped, and printed with the common printing press: a new invention by Piil, for etching on zinc in a raised manner.

[If this art be not calculated to supersede wood engraving, it can be applied with great advantage for certain purposes in the etching style, for maps, plans, drawings of machines, &c. A zinc plate is covered with an etching ground, the drawing etched in the usual manner with the needle, and bitten in. The etching ground is now removed, the deep lines cleaned with acid, and then the whole plate, in a warm state, covered with an easily fusible metal, with which, of course, the lines of the drawing are filled up. When the metal thus laid on is cold and firm, the whole plate is planed until the zinc appears again, and only the lines of the drawing remain filled with the fusible metal, which is easily distinguished by its white colour, from the grey of the zinc. The whole plate is now etched several times; the former lines of the drawing, filled with this easily fusible negative metal, are not affected by the acid, while the pure zinc is eaten away. In this manner a drawing for printing in the copper-plate press can be converted into one in relief for use in the ordinary printing press.]

Letter-founding. — Matrices of the newly-cut Neschi or Arabic-Turkish characters, used for printing; also several specimens of matrices produced by the galvanic process. Composition of a Chinese text with moveable types, which consist of 400 signs, lines, and points, by which almost all the Chinese characters may be formed. A specimen, showing the composition of Japanese with moveable types, for comparison with music, which is also composed with moveable types.

[The combination of the Chinese characters develops a new invention of the highest interest. The 80,000 signs of that language are formed in the same manner as music is formed with moveable type, according to the typometrical system of M. Auer, the director of the establishment. This system contains about 400 points and strokes; and although the trouble of joining these is taken into account, still the advantage of Gutenberg's invention of printing with moveable types is manifestly of the greatest importance, when we consider the immense number of Chinese characters.]

Stereotyping Department. — The types of the characters of the entire globe, two large tables, each of 540 square inches, stereotyped in type metal, together with gutta percha and plaster of Paris matrices, also copies of them produced by the galvanic process.

Electro-Metallurgy. — Raised and engraved plates of woodcuts and objects of typography and chalcography.

Copy of two petrifications of the fishes *Pycnodus Fenzlii* and *Chirocentrites coroninii.*

[The original was first incrusted with gutta percha. This crust was taken off, and, after being prepared, placed in the galvanic apparatus: a copy was thus obtained, without the aid of a drawing, which is quite fit for printing.]

A large plate 33 feet long and 2½ feet broad. On account of the difficulty of transporting this, the plate is very thin.

Three large tables of copper matrices, each of which contains 1,200 Chinese characters.

Two large plates of 1,800 square inches each, for copper-plate printing or polishing.

Several gutta percha matrices for the use of this department of science.

Refuse of copper used in the electro-galvanic process, stretched, rolled, beaten, &c., to show the quality of the same.

Works of sculpture from the antique (high reliefs and low reliefs), &c., electrotyped in copper.

Several metal frames, produced by the galvanic process, containing photographs.

The stereotype plates are of galvanic copper.

Typometry.—Illustrations of the system of calculating and measuring off the space taken up by the respective letters, by the Director of the Imperial establishment, Alois Auer, Government Counsellor and Member of the Imperial Academy of Sciences. (An explanation of this system has been printed in the memorials of the Academy, Vol. I.)

[The system of Typometry, or the method of calculating and measuring the space taken up by each separate letter, deserves attention. Not only is the advantage of being able to calculate by this system what space manuscripts will occupy when they are printed of great importance, but a still greater advantage attaches to this system, namely, that all sorts of tabular matter may now be much more easily arranged, because the space taken up by each separate column can be calculated to the greatest nicety: this is of great importance in a technical point of view.

Three thousand hundred weight, or 150 millions of letters, have been cast in the foundery of the establishment according to this system.]

Typography. — Some of the specimens of printing of the Imperial establishment, as German, Roman, and Italic types, the punches of which were cut in the establishment. Likewise all the script and ornamental letters which are in use on the European continent.

Printed texts of the foreign characters of the whole world, some of them of various sizes.

German letters used for books during the middle ages, from the sixth century to the invention of the art of printing.

The type of the first printed work, Gutenberg's Bible, in four different sizes.

Ornamental letters copied from originals of the seventeenth century.

Types for the use of the blind, in the European and Asiatic languages.

Typographical Productions in Glazed Frames.—"The Hall of Languages," published by the Director of the establishment, A. Auer, Government Counsellor.

First Part,—The Lord's Prayer in 608 languages and idioms, printed with Roman type; with their respective interpretation. In nine tables.

Second Part,—The Lord's Prayer, printed with the characters appropriate to the respective nations, containing 206 varieties of language, and a survey of more than 100 foreign alphabets and characters, with transcriptions. In eight tables.

Development of the literal characters of the whole globe, in a genealogical form. On one hand from the Chinese characters, to which are added the Koreanic and Japanese characters, and on the other hand from the African hieroglyphic signs, which are immediately followed by the Phœnician characters, which represent the first known signs of writing. All the rest of the alphabets take their origin from these, and then branch out into numberless ramifications which are traced up to the characters used throughout the world at the present day.

The Gutenberg Bible, of which a page contains 42 lines, with painted ornamental border.

In the Portfolio. — Types of the Propaganda at Rome, in 23 alphabets.

Bodoni's "Oratio Dominica," 28 alphabets.

The foreign types of France, from Falkenstein's History of the Art of Printing, 42 alphabets.

The foreign types of Germany, after Ballhorn, 19 alphabets.

The types of India, 13 alphabets.

Pedigree of the Emperors of Austria.

Ground-plan sketches of the whole of the Imperial Establishment.

Two smaller portfolios contain an album in 16 languages, printed for particular occasions.

Printed Books in ordinary Binding.—Memorials of the Imperial Academy of Sciences, one volume. Objects illustrative of the sciences of mathematics and natural history: to this is added a map of 58 tables, executed in coloured lithographs.

Memorials of the Imperial Academy of Sciences, one volume. Objects illustrative of philosophy and history. With 12 lithographed tables.

The typometrical system of the Director of the Establishment, Alois Auer.

Hammer-Purgstall, Rhetoric of the Arabs, 1st volume.

Treaties between Austria and Turkey, Turkish, with a translation.

Pfizmaier's Arabic-Persian-Turkish Grammar.

Schlechta, Abdurrahman Dschami's "Fruhlingsgarten," Persian and German.

Schlechta, "The Right of Nations in time of War and in time of Peace," two volumes, translated from the German into Turkish.

A Treatise on the higher Arithmetic, Turkish.

Boller's Sanscrit Grammar.

Catalogue of the Hebrew Manuscripts in the Imperial Library at Vienna.

Goldenthal, Clavis Talmudica, Hebrew.

Arneth, Cabinet of Coins and Antiquities.

Bolza, Manuale.

Kohlgruber, Hermeneutica.

Statistics and Tables of Commerce of the Empire of Austria, 9 volumes in folio.

History of the Austrian National Bank.

Lira del Popolo, two parts, for the use of singing-masters.

Hoven, Heine's Songs, one volume in 4to., printed with moveable types for music.

(In the press. Printed with the original types.) For Dr. Mehren of Copenhagen—Rhetoric of the Arabs.

For Dr. Holmboe of Christiana—Comparative Knowledge of Languages.

For Dr. Zenker of Leipsic—Turkish Chrestomathy and Dictionary.

For Dr. Spiegel of Erlangen—Zend-Avesta, by Zoroaster.

Diplomatarium of the Monastery at Kremsmünster, printed with the types appropriate to the respective centuries.

Pfizmaier's edition of "The Four Screens," a Japanese novel, with a German translation. For the first time printed with moveable Japanese types.

[This work in the Japanese language, printed for the first time with moveable type, and accompanied by a German translation of Dr. Pfizmaier, deserves notice. Though but little known in its native country, this edition has been translated in America, and is already in the press. The appearance of this Japanese novel caused a great sensation in foreign countries: the perfection with which the printing had been executed actually created the doubt in the minds of the members of a German Society for the promotion of the Oriental languages, whether the Japanese part and the illustrations of this work had not been executed at Japan, and the German part only at Vienna.

"At the first view," observes a writer in the *Journal of the Oriental Society*, "a sceptical critic might be led to suppose that the honourable Imperial establishment had bought the original edition at Japan, from which place it was also furnished with the paper on which the German translation had been printed, and that then it had both parts bound together. But no! this fine satin-like paper . . . . . . is of German manufacture; these Japanese characters, which with their arabesque-like scrolls resemble the productions of transient stenography; and these printed illustrations, with portraits, costumes, buildings, and utensils, which seem to belong to a different world—they were not produced by woodcutting at Jedo, but have been closely copied at Vienna, from the originals, by means of typography and zinco-lithography. That is, the Japanese characters have been printed, for the first time, with moveable type, and the illustrations, together with some explanations belonging to them, and the preface, have been engraved on zinc; proofs of them were then pulled on paper, after which they have been transferred to stone."]

Specimens of Chromo-lithography. (By Hartinger.)—Two flower-pieces. One fruit-piece. One head for study. One still life.

Genre-picture, representing the Emperor Joseph II., who prescribes 100 ducats as medicine to a widow who is dying of hunger.

Flowers (16 plates). For the work, "Paradisus Vindobonensis."

Butterflies, petrifications, plants, objects of architecture, &c.

The original oil paintings are hung up next to them, in order that they may be compared at pleasure with the printing in colours.

[The impressions printed in single colour exhibit the manner in which the various colours have been combined. The point-holes, which may be perceived, are produced by a pin on the stone, by which the several colours are made to fit closely to each other.]

Illustrations of remarkable diseases of the human skin, six sheets.

Copper-plates and Steel Engravings.—Illustrations for works, and cards printed on particular occasions.

Galvanography.—The Departure. Executed on copper by Schindler, etched by Axmann, copied by means of the galvanic process, and printed at the Imperial establishment. There is subjoined, for comparison, the original as well as the copy produced by the galvanic process, and proofs pulled before the etching of the plate.

[Galvanography, in the short interval which has elapsed since its first appearance, has been divided into two methods. The first consists in the composition being executed by the artist himself with colour (roasted terra di Sienna, or black-lead and linseed oil) and the ordinary brush, in the same way as an Indian-ink drawing upon a silvered-copper plate, which is then placed in the galvanoplastic apparatus, in order to obtain a copy of the raised drawing. The copy, or sunk plate thus obtained, is touched up with the usual copper-plate engraving tools, and the light and shade improved, and then serves for printing from: it can, of course, by means of the galvanic apparatus, be multiplied to any desired extent. This method, certainly, possesses the advantage of allowing rapidity in execution and great freedom of treatment. In the second method of galvanography, the outlines of the given drawing are etched in the usual manner, the various tones of the picture laid on with the roulette, and a galvanoplastic copy of this sunk plate is then produced. On this second (raised) plate, the artist completes his picture by means of chalk and Indian ink, and puts in the lights and shades, &c.; from this a second galvanoplastic copy is produced. This second copy, or sunk plate, the third plate in the order of procedure, serves, after being touched up, for printing from in the copper-plate press.]

Ornamental Department.—Original drawings in the Oriental and Occidental styles, executed for works printed for the East and West.

Ornamental Tools for Bookbinders.—Different ornaments exhibiting the Oriental and Occidental styles.

Photography.—Specimens of, by Paul Pretsch, Lower Road, Islington, London. Size, 16½ by 21½ inches, the largest photographic picture hitherto made.

Views of Schonbrunn (the usual summer residence of the Imperial Court) and of Vienna.

View of a garden.

Neptune group.

Gloriette (an elevated point, from which a most extensive view is enjoyed), Schönbrunn.

Entrance, with the obelisk of trophies.

Entrance to the Gloriette.

Interior of the Gloriette.

Three heads.

Two heads, Niobe and Caracalla.

A courtyard in the suburb Neubau.

The president of the institution, Councillor Auer, has made this combination the object of his peculiar interest. Ten years ago the establishment was not thriving; but by his unwearied care he has raised it to one of the greatest in the whole world. At this moment it occupies, in the different branches of business, more than 900 persons, in a space extending over 51,000 square feet.

Mechanical inventions, discoveries of science, the creative genius of the artist, and the productive activity of talent, are all successfully employed in conjunction with the powers of nature, as steam, the moving power, lightning, the hydro-electric fluid, and light, the producer of pictures.

Five large buildings, from four to six stories high, contain all the *matériel* of the establishment: these are connected with each other by means of galleries, while two stone and three iron staircases connect the upper with the lower floors. A steam-engine of 20-horse power moves 46 printing-machines, 24 copper-plate presses, and 8 glazing cylinders; it also pumps and raises cold and warm water to the different floors of the building, and, in addition, conveys through copper pipes hot air into all the rooms. Similar provisions supply four large wash-houses with the means of cleaning the types: a large high drying-house, which rises like a church between two of the other buildings, furnished with galleries all round the interior, is heated by the same means. All the workshops and rooms are lighted with gas, and provided with speaking-tubes, which end in 15 mouths in the office of the director of the establishment. There are also 43 large and 12 smaller iron letter-printing presses, 40 lithographic presses, 8 for numbering, and 5 for embossing, worked by hand. Eight type-founding machines and 10 furnaces, attended by four persons each, furnish a constant supply of fresh types, of which the establishment possesses about 3,000 cwt., or near 150,000,000 of letters, all of which are kept in the greatest order. More than 300,000 sheets are printed daily, for which 600 reams of paper are required. Taking the year 1841 as an example, and comparing its productions with what is now done, the result shows that as much is now printed in 13 days as in the whole of that year.

363 **Imperial Military Geographical Institute,** *Vienna.*

A variety of maps.

Portfolio of maps engraved on copperplates, executed from a military survey, founded on astronomical and trigonometrical observations.

Topographical map of the Lombardo-Venetian kingdom. 42 large sheets. Scale $\frac{1}{86400}$.

Special map of Moravia and Silesia. 20 sheets.

Special map of Bohemia. 38 sheets. Scale of both maps $\frac{1}{144000}$ (of the last map seven sheets have been already published).

General map of Moravia and Silesia. 4 large sheets. Scale $\frac{1}{288000}$.

Topographical map of Central Italy, containing Tuscany and the Papal States, after a triangulation and an original survey, executed in these countries in the years 1841–3, by Austrian officers, under the direction of the Mil. Geog. Instit. Scale $\frac{1}{86400}$, in 49 large sheets, of which 11 have been published.

A reduction on the scale of $\frac{1}{19250}$ of the map of Paris, by Pelet. The two preceding are lithograph.

A small travelling and post map of the Austrian States, engraved on four stones, printed in colours, of which the complicated execution is to be considered with regard to its very small scale.

Globe, 2 feet radius, letter-press in the Armenian language. In 7 sheets. The drawing of the mountains with chemical crayon, the rest engraved on stone; printed in different colours.

Ethnographical map of Vorarlberg, the drawing of the mountains with chemical crayon, the rest engraved on stone; printed in six colours.

Geological map of the environs of Leoben, in Styria, transferred from a copperplate on stone, and printed in 11 colours.

Geognostical map of the Austrian States, with part of Germany and Italy, engraved on stone, and printed in colours in different manners.

Geognostical maps of Egypt, the Taurus, the Eastern Sudan, Syria, and Nubia, annexed to Mr. Russegger's "Travels," composed, drawn, and engraved on stone, and printed in many colours in the Imp. Milit. Geog. Instit.

Environs of Vienna and Baden, composed of 96 sheets, executed on stone after an original survey. Scale $\frac{1}{14400}$. The drawing of the mountains with chemical crayon, the rest engraved on stone; the different kinds of cultivation printed in colours.

General map of Europe, by Scheda, executed in the Imperial Royal Military Geog. Instit., composed of 20 sheets. The drawing of the mountains with chemical crayon, the rest engraved and printed in colours.

364 **Cerri, Carl,** Officer in the Imperial Military Geographical Institute, *Vienna.*

Map of Italy in eight sheets, plain and coloured.

365 **Raffelsperger, Franz,** *Vienna*—Patentee and Printer.

Maps, with the names in the German, Hungarian, Bohemian, Servian, Illyrian, Italian, French, and English languages, executed by the ordinary printing press. Outline maps.

366 **Battagia, Giuseppe,** *Venice*—Printer.

Specimens of typography, with simple and convenient binding.

367 **Haase's Sons, Gottlieb,** *Prague, Bohemia*—Printers and Type-founders.

Type of various kinds; steel dies, matrices, &c.

Specimens of typography, in gold, silver, and colours, including a Roman missal, Thomas à Kempis, &c.

[The number of printing and lithographic establishments in Austria has considerably increased of late years. They amount in all to 400, of which 160 are found in Lombardy and Venice, and 65 in Vienna. The most extensive of these establishments are in Vienna and Prague. First on the list must be noted the Court and Government Printing-Office at Vienna. The type-founderies, usually in connection with the printing-offices, not only cover the home demand, but also obtain a brisk though small foreign trade.]

368 **Arneth, Joseph,** Director of the Imp. Numismatic and Antiquarian Cabinet, *Vienna.*

A work on gold and silver monuments, by the exhibitor (as a sample of the process of copper-plate engraving in Vienna).

368a **Kayser, Josef Franz,** *Gratz, Styria*—Lithographer.

A variety of maps.

369 **Rauh, Johann,** *Vienna*—Lithographic Printer.

An album, containing lithographic copies from original drawings by Vienna artists.

Specimens of the various styles of lithography and printing.

370 **Bermann, Josef,** *Vienna*—Publisher.

Lithographs :—

Views on the banks of the Danube.

The Austrian armies during the course of two centuries. (40 prints.)

The Austrian army in 1849 (8 prints).

Statistical maps of Austria.

371 **Mechetti, Pietro** (late **Carlo Mechetti**), *Vienna*—Publisher.

Portraits drawn from nature, by Krichuber.

Music composed by Dessauer, Spohr, Willmers, Strauss, &c.

372 **Muller, H. F.,** *Vienna*—Publisher.

Freijer's map of Carniola.

Illustrations to the History of Austria, by Professor Geiger.

Album of the Vienna artists.

Album of waltzes and national melodies.

373 **Neumann, T. L.,** *Vienna*—Publisher.

Lithographs :—Portraits, battle scenes, &c.

Album, containing views of Vienna.

374 **Steiger, J. Georg,** *Vienna*—Manufacturer.

Playing-cards, of four sorts, exhibited in a frame. The frame by Jos. Griller, of Vienna. The metal ornaments by Gottschalk and Lamasch, Vienna.

[To this branch of industry belongs also the manufacture of coloured and embossed papers, playing cards, paper-hangings, pasteboard, and papier maché ware. Almost the entire production of these several articles, with the exception of the last, belongs to Vienna. Lombardy alone has established a few paper-hanging factories. The Vienna articles are excellent. As to the manufactures in papier maché, those of Bohemia are the best; those of Vienna the most elegant.]

374a **Greiner, M.,** *Vienna*—Caligraphist.

A Lord's Prayer, and three other specimens of caligraphy.

375 **Schütz, Franz,** *Vienna*—Caligraphist.

A caligraphic tableau.

376 Habenicht, August, *Vienna*—Dressing-case Maker.

Ladies' toilet-table, with ivory ornaments.

A painter's easel.

Fancy articles of leather, portfolios, cassets, pockets, ladies' and gentlemen's companions, travelling medicine chests, cigar-boxes, portmonnaies, lucifer-match boxes, &c.

377 Stiasny, Wilhelm, *Prague, Bohemia*—Bookbinder.

A bill case gilt.

An album with the view of the royal castle and cathedral at Prague.

Papeterie in brown velvet, with gold strings.

378 Renel, A., *Vienna*—Manufacturer.

Fancy-ware of wood and paper; paper baskets; screens; letter-weight; tableau.

Samples of stamped-paper ornaments.

379 Johne & Thiele, *Vienna*—Manufacturers.

Pasteboard ware: caskets, watch-stands, pin-cushions, goblets, &c.

Stone pasteboard ware: cups, baskets, caskets, watch-stands, pin-cushions, &c.

380 Berger, C. H., *Vienna*—Manufacturer.

Wafers of paper and gelatine, of different kinds.

381 Hardtmuth, L. & C., *Budweis and Vienna*—Manufacturers.

Black-lead and red-chalk pencils of various kinds, and artificial slates.

382 Grohmann, Adolf, *Schönlinde, Bohemia*—Manufacturer.

Silk-lace, petinets, veils, &c.

383 Meinl's Heirs, A., *Baringen, near Carlsbad, Bohemia, and Vienna*—Manufacturers.

Silk-lace, woollen-lace, of different colours.

Embroideries, including pocket-handkerchiefs, ladies' dresses, collars, &c.

[The lace manufacture formerly provided a very important source of employment for the inhabitants of North Bohemia; but, by the discovery of the bobbin-net frame, the lace manufacture by hand has very much declined, and the number of the inhabitants of the mountain districts, who were once engaged in it, has now fallen from about 80,000 to 12,000. The cheapness of the articles produced, and the establishment of lace-making schools, whereby an improvement on the methods of manufacture could be learned, have infused, of late years, new life into this branch of industrial occupation, but without supplying any well-founded hope that they will suffice to restore it to its former flourishing condition. In Upper and Lower Austria, in Silesia, and in Carniola likewise, lace of ordinary kinds is still manufactured. Net, particularly in Vienna and Bohemia (more especially in the district of Eger), is largely produced, and veils at Milan.

The productions of the bobbin-net manufacture in Vienna, Bohemia, Moravia, the Vorarlberg, come in part directly into use, and in part are previously elaborated by lace-work and embroidery. Blonde embroidery is carried on in the Erzgebirg. Fine embroidery is executed chiefly in the Vorarlberg and also in Vienna.]

384 Rölz, S., *Graslitz, Bohemia*—Manufacturer.

Silk bayadere handkerchiefs.

Embroidered cambric pocket-handkerchiefs.

Embroidered cambric chemisettes.

385 Schlick, Franz, *Vienna*—Manufacturer.

A large assortment of silk-lace, petinet, and point-net-lace, bayaderes, handkerchiefs, veils, shawls, scarfs, &c.

386 Bossi, Josef, *Vienna*—Manufacturer.

Cashmere and embroidered shawls and scarfs.

387 Laporta, H. F., *Vienna*—Manufacturer.

Embroidered scarfs and handkerchiefs.

Mantillas.

Scarfs.

Velvet and cashmere shawls.

388 Bauhofer, Franz, *Vienna*—Embroiderer.

The arms of England, embroidered with gold, silver, and silk.

389 Benkowits, Marie, *Vienna*—Artistic Embroideress.

An embroidery of crape-thread on white gros de Naples, representing "Beneficence."

An embroidery of wool and silk, representing "the grave of the 10th battalion of Jägers."

390 Fusinata, Maria, *Belluno.*

An embroidered carpet.

390a Schreier, Susanna, *Vienna*—Manufacturer.

Specimens of knitting.

391 Krach Brothers, *Prague, Bohemia*—Manufacturers.

A dress coat of peculiar workmanship.

A double coat, that can be worn on either side, made of a new material.

A coat made of woollen stuff, of peculiar cheapness.

Another made of a new woollen stuff.

392 Singer, Joseph, *Pesth, Hungary*—Manufacturer.

Elastic dress-coat.

393 Budinsky, Anton, *Reichenberg, Bohemia*—Manufacturer.

Hosiery, including ladies' and gentlemen's vests, trousers, caps, shoes, &c.

394 Malatinszky, Emerich, *Miskolz, Hungary*—Manufacturer.

Hungarian national dresses, called Szür.

395 Rigo, S., & Kraetschmar, *Rima Szombath, Hungary*—Manufacturers.

Various Hungarian coats (guba).

Hungarian shooting jackets.

395a Nessel, C., *Oedenburg, Hungary*—Tailor.

A coat and waistcoat.

396 Oestreicher, D., *Mayk, Hungary*—Manufacturer.

A white and a grey Hungarian cloak (Guba).

Hungarian cloths (Hallina) and rugs.

397 Schramm, Simon, *Hermannstadt, Transylvania*—Weaver.

Long veils for the Roman national costume.

398 Trade Union, *Hermannstadt, Transylvania.*

Szelistjer rugs. A Szarika, belonging to the Wallachian national costume (produce of the domestic industry of the Wallachian peasantry).

399 Seitter, Antonia, *Brünn, Moravia*—Manufacturer.

Caps of various countries, including Nisam, Megidie, Servian, and Polish.

400 **Radmeister Community** (The Guild of Iron Masters), *Vordernberg, Styria.*

Soft pig iron, sparry iron ore, gangue stone, slags.

Bar iron, prepared for making blistered steel.

401 **Egger, Count Gustav, Von,** *Knappenberg, Carinthia.*

Efflorescent pearl-spar (sparry iron ore) from Fleischenstoll.

Heavy-spar (sulphate of baryta) from Andreaskreuz.

Efflorescent pearl-spar from Friedenbau, Andreaskreuz, and Magarethenbau.

Crystallized sparry ore from Ferdinandistoll.

Fibrous sparry iron ore (hematite) from Andreaskreuz.

Calcedony with dendrites, on brown iron ore, from Andreaskreuz.

Pearl-spar, with rock crystal, from Andreaskreuz.

Crystallized calcareous spar on brown iron ore, from Ferdinandistoll.

Crystallized sparry ore from Andreaskreuz.

[Austria stands in the first rank of continental countries in the production of iron, both as regards the quantity and quality of its ores, and the antiquity of its mines.

The iron productions of the Austrian empire may be divided into that of the Alpine countries (Styria, the Tyrol, Carniola, Upper and Lower Austria, and Lombardy); of the mountain districts of Bohemia, Moravia, and Silesia; and of the Carpathian countries (Hungary, Galicia, and Transylvania). The nature of the ore in Bohemia and Moravia, as also in the Carpathian countries, is more fit for the production of cast iron and articles made from the same, whilst the Alpine countries have mainly devoted themselves to the production of steel and wrought iron.

The Exhibition affords a comprehensive idea of this important department of Austrian industry. Almost every part of it is represented; Bohemia, Moravia, Styria, Lower Austria, the Tyrol, Carniola, and Carinthia, having sent specimens of their several iron productions, commencing with the raw produce in different stages of preparation; next follow the sheet iron and wires, and finally the finished manufactures.

The Austrian iron, and particularly the Austrian steel (called in England "Milan steel") is acknowledged to be of superior quality; in consequence of which so great a demand for the latter has been created abroad, that the manufacturers of scythes, among others, complain of want of material.

Hitherto charcoal has been mostly used in the iron works, but coals are beginning to take its place; and also all the new improvements in smelting and refining are being adopted.]

402 **Egger, Count Gustav Von,** *Hüttenberg, Treibach, and Oberfellach, Carinthia.*

Pig iron, cast steel, brescia, and die steel.

Nails for the Levant.

403 **Rauscher Company, Ironworks,** *St. Veit, Heft, and Mosinitz, Carinthia.*

Pieces of iron ore, white and refined scoriæ and sheet-iron.

404 **Christalnigg's, Count Von, Mining Company,** *Eberstein, Carinthia.*

Brown iron-stone.

Brown and heavy spar.

White cast-iron for making steel.

Fine metal for puddling.

Grey metal for casting.

405 **Zoiso, Widow Carl, Ironworks,** *Laibach, Carinthia.*

Iron ores, pig iron, bar iron, steel, and saw steel.

406 **Kossuch, Johann,** *Szinobánya, Hungary.*

Ankerit iron ore, raw, half, and entirely efflorescent, also roasted.

Samples of pig iron produced from these ores.

407 **Imperial Smelting Works,** *Pillersee and Zennbach, Tyrol.*

Refined steel, spring steel, and cast steel.

Cast-steel for scythe blades, refined steel and spring-steel from Jenbach. Sparry iron ore.

Pig iron and steel from Pillersee.

408 **Depôt of the Imperial Iron Mines and Iron Works,** *Vienna.*

Various specimens of cast steel from different ores of Styria. Slags and scoriæ of the same.

Specimens of sparry iron ore, with some from Mariazell.

Specimens of steel from Weyer: raw; chisel; polished and common shear; mill-steel, single, double, triple, and quadruple welded; and die, and Brescian triple-hardened.

Specimens of iron for hoops, tramroads, wheels, wall-nails, rails, &c.

Specimens of matrix, spring, tack, and angle iron.

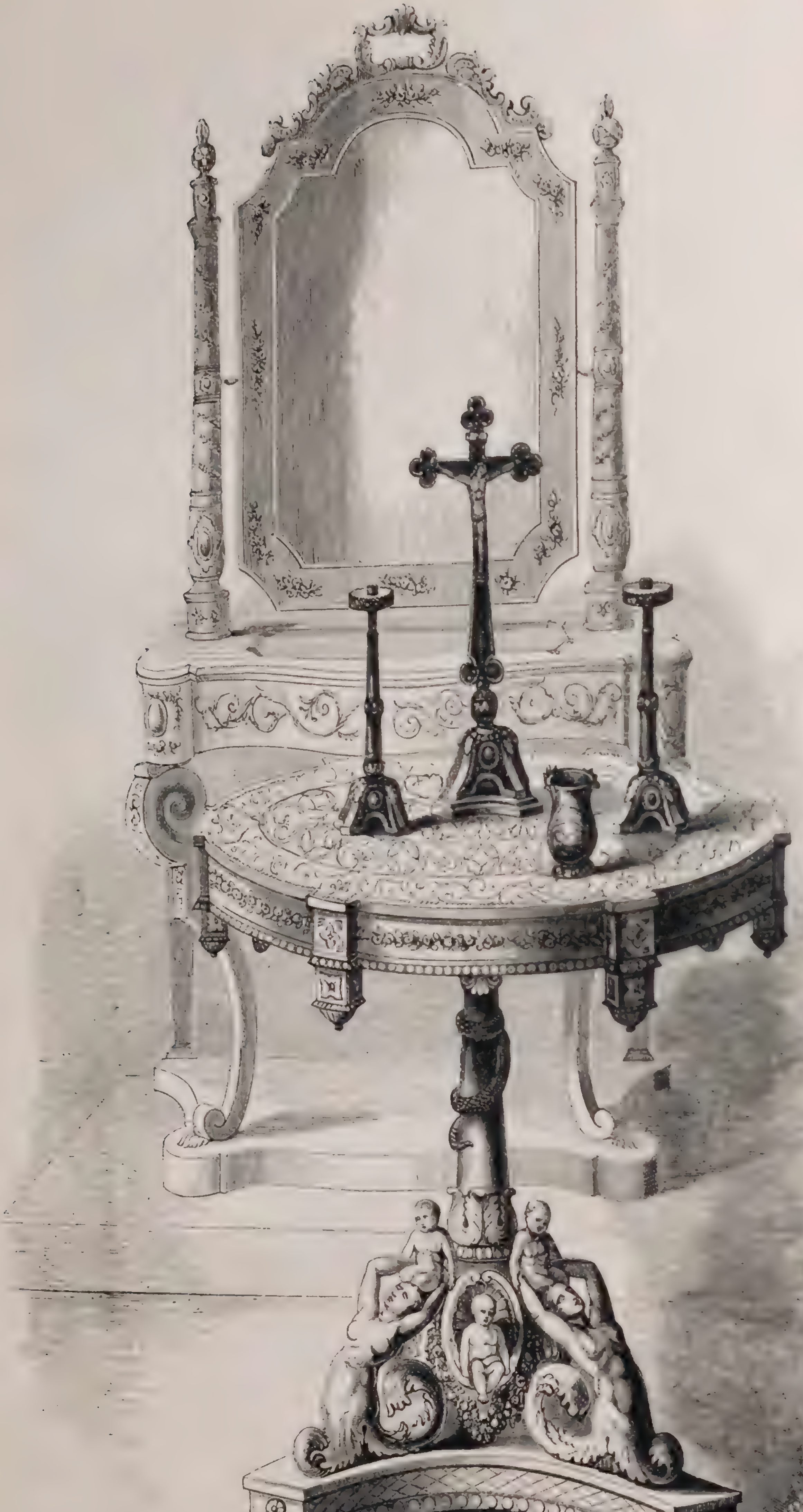
Specimens of refined iron, puddled iron, sheet iron, pig iron, and cast iron of various sorts.

[To the Austrian monarchy, by far the most important of all the various branches of its mining wealth and industry is that of its iron, whether it be considered in reference to the extensive development it has already received, or the still more encouraging prospects of its future enlargement, which only requires proper care devoted to it, and the many mistakes which at present attend its management, to be abandoned. The pig iron of Austria is smelted in 257 blast furnaces; so that, on an average, more than 12,500 cwt. are the produce of each of these works annually. The cast iron is run, for the most part, direct from the blast furnaces into the moulds. Iron of the second casting is produced in thirty-seven cupola and nine reverberatory furnaces, and is less considerable in quantity. During the period from 1843 to 1847, the imports of iron ore and pig iron, including scrap iron, were, on an average, respectively 50,381 cwt. and 24,557 cwt., the exports of iron ore being 9,078 cwt. and of scrap iron 5,110 cwt. The production of malleable iron, including the amount yielded by all the various methods and processes applied to different kinds, and for securing different degrees of fineness, exceeds two million cwt. annually.

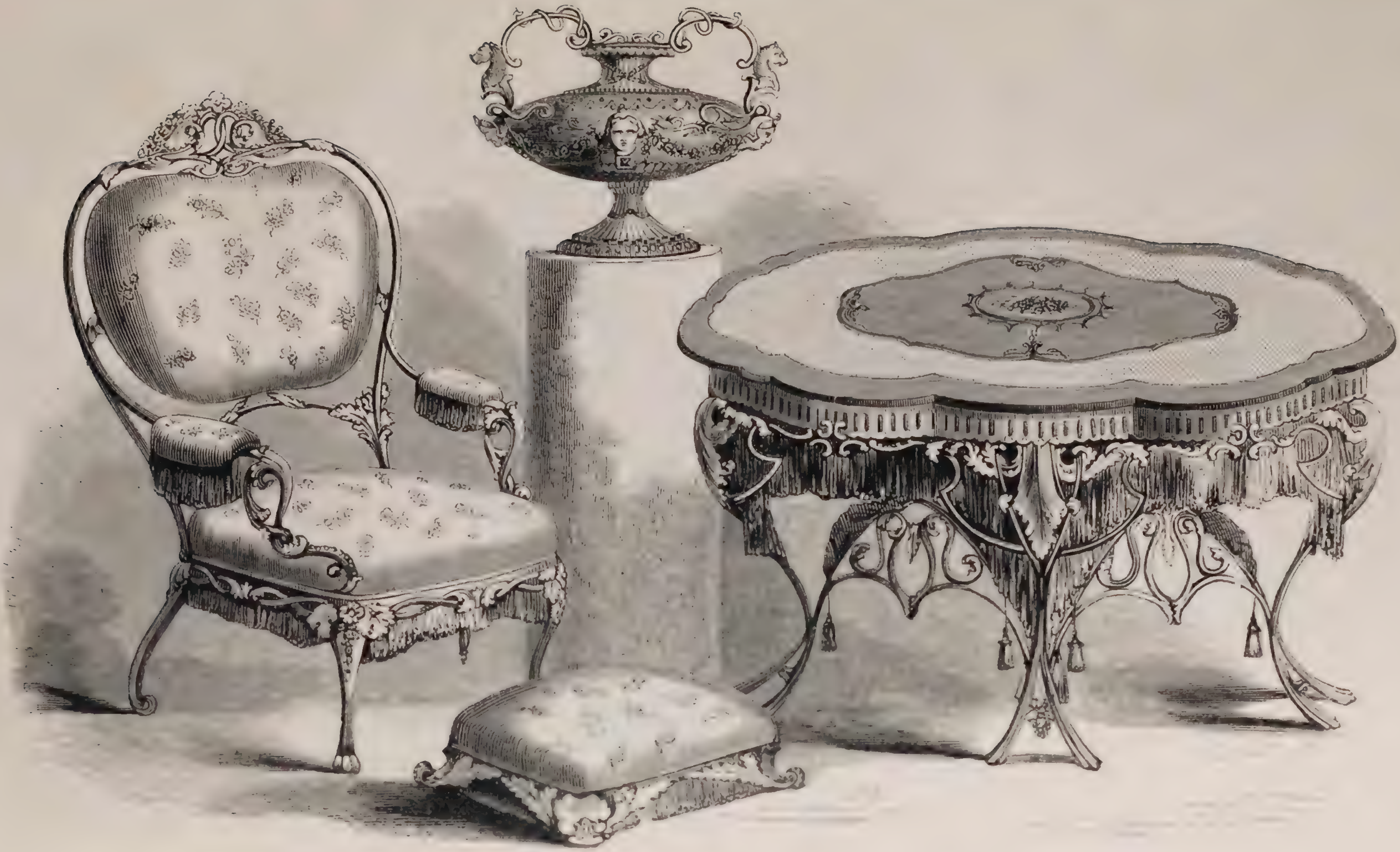
The production of steel amounts to 287,300 cwt.

The production of this quantity of steel requires the conversion of 368,000 cwt. of pig iron, still leaving upon the whole yield of the latter a surplus of 201,000 cwt. But from this surplus we must deduct 150,000 cwt., which are melted down in the cupola and reverberatory furnaces. The balance of trade in malleable iron and steel is in favour of Austria.

To the production of cast-iron by the blast furnaces, amounting to 443,871 cwt., must be added, as has been already observed, that from the cupola and the reverberatory furnaces. These work 150,000 cwt. of pig iron, and deliver about 136,000 cwt. of cast iron. Almost the whole of the malleable iron produced (amounting to 2,243,000 cwt.) must be retained for further manufacturing processes in Austria, seeing that the annual excess of exports over imports of this article is not more than 1,052 cwt. On



A LADY'S INLAID TOILET-TABLE. M. POSCHENI. AUSTRIA.
AN ORNAMENTAL TABLE, CAST IN ZINC. M. KITSCHELT. AUSTRIA.



ORNAMENTAL FURNITURE, MADE OF IRON TUBES. M. A. KISCHELT. AUSTRIA.

the other hand, the stock of steel remaining to the Austrian manufacturer was reduced to 201,000 cwt. by the excess of exports over imports, 86,350 cwt.]

409 EGGER, COUNT FERDINAND VON, *Lippitzbach, Carinthia.*
Puddled hoop, square, and rod iron.
Rolled steel for hand and machine saws.
Hard plate iron for cementing.

410 EGGER, COUNT F. VON, *Treibach, Carinthia.*
A selection of Brescian steel, including cast, accialon, fir, and scythe steel.

411 TÖPPER, ANDREAS, *Scheibbs, Lower Austria.*
Hoop and rod iron. Sheet-iron.
Ship, tender-roofing, and tubing sheet-iron.
Welded tubes for manometers, and water and gas pipes.

412 FÜRSTENBERG, PRINCE, *Althütten, Neuhütten, Rostok and Neujoachimsthal, Bohemia.*
Various samples of wrought and stretched iron, round and flat-angle iron, carriage-spring iron, ploughshares, spring-iron, sheet-iron for boilers, wrought lathe-spindles.
Several cast-iron stoves and monuments.
Colossal crucifix, chains, bedstead, balcony, &c.

413 METTERNICH, PRINCE, *Plas, Bohemia.*
Cast-iron stove decorated with hunting subjects.

414 BOUQUOI, COUNT, *Kallich Foundry, Bohemia.*
Hoop-iron, round bar-iron, sheet-iron, &c.

415 ANDRASSY, COUNT GEORG, *Dernö, Hungary.*
Hoop-iron stretched by charcoal-gas loops.

416 GURK CHAPTER'S FOUNDRY, *St. Magdalena, Carinthia.*
Various kinds of steel:—Brescia steel. Steel for files and scythes.

[Of the different branches of this department of metal manufactures, those that are conducted on a large scale seem to deserve most attention. Among these, the first that presents itself to notice is the manufacture of scythes, sickles, and chaff-cutters. The produce of 179 scythe factories was 4,000,000 of scythes, 1,600,000 sickles, and 90,000 chaff-cutters: these articles, on account of their excellent quality, have found their way into all parts of the world. The manufacture of pans, boilers, and kettles, carried on in 50 establishments, turns out 25,000 cwt. of articles. The manufacture of wire is of greater importance, and is carried on at 100 factories, producing about 80,000 cwt. The manufacture of nails is also very extensively carried on, and amounts to 50,000 cwt. The smaller workshops, appropriated to other manufactures in iron, produce files, knives, hatchets, shovels, sword-blades, gun-barrels, and various other articles, give employment to more than 60,000 persons (of whom about 15,000 are masters); and support 150,000 individuals, including the members of the families of those employed.]

417 SCHWARZENBERG, PRINCE, *Murau, Upper Styria.*
Paal steel, Brescian steel, Styrian steel, and hard iron.
Refined steel. Soft iron for blistered steel.

418 PFEIFFER, JOSEF, *Spitzenbach, Upper Styria.*
Shear Brescian steel.
Steel for scythes and mills.

419 THURNSCHELZ, COUNT GEORG VON, *Klagenfurt, Carinthia.*
Various kinds of steel and iron for nails.

420 FISCHER, ANTON, *St. Egidi, Lower Austria.*
Iron ore and pig iron. Spring steel.
Various samples of rolled bar iron.
An assortment of iron wire.
285 samples of files.

421 FISCHER, BERTH, *Traisen, Lower Austria*—Manufacturer.
Various articles of cast steel, including spindles for spinning establishments, &c.
Articles of malleable cast iron, such as gun-locks; broken pieces, to show the grain, and its yielding nature.

422 LINDHEIM, H. D., *Josephiphutte, near Plan, Bohemia.*
Railroad rails. Bar, hoop, and rod iron.

423 WÖLLERSDORF TIN PLATE WORKS, *Wöllersdorf, Lower Austria.*
Tinned sheet iron. Embossed and chased tin moulds.

424 KLEIST, BARON VON, *Neudeck, Bohemia.*
Gutter pipes. Thin sheet iron, called Sengler's iron post paper.

425 EGGER, COUNT F. VON, *Feistritz, Carinthia.*
Musical strings, cording, curry-comb, bed-springs, and pit-rope wires. Fine, middle, and ordinary wire.

426 FISCHER & WURM, *St. Egidi, Lower Austria*—Patentees and Manufacturers.
Different descriptions of iron-wire rope.

427 EBERSTALLER & SCHINDLER, *Stadt Steyer, Upper Austria*—Manufacturers.
Ordinary and fine iron wire. Wire for musical strings. Saws.

428 HUEBER, FRANZ, *Josephsthal, Styria.*
Different kinds of iron and steel wire.

429 SCHEDL, CARL, *Wasserlug and Frauenthal, Lower Austria.*
Rolls of different kinds of iron wire. Steel wire.
Ordinary, middling, and fine wire. Spring wire.

430 SALM, PRINCE, *Blansko, Moravia.*
Ornamental bronzed street-lamp, designed by B. di Bernardis, in Vienna, represented in the engraving, p. 1032.
Cast-iron statue—Field-marshal Count Radetzky, modelled by Fernkerna.
Four cast-iron statues, representing heroes from the Nibelungen Lied, modelled by Fernkorn.

431 ALBRECHT, ARCHDUKE, *Trzinietz, near Teschen, Silesia.*
Cast-iron pots and pans, with non-metallic enamelling.

432 BARTELMUS BROTHERS, & BERNHARDI, *Neu-Joachimsthal, Bohemia*—Manufacturers.
Cast-iron cooking apparatus, with non-metallic enamelling.
Horse-manger, &c.

433 PLEISCHL, ADOLPH, *Vienna*—Patentee and Manufacturer.
Sheet-iron saucepans, boilers, and cups, with non-metallic enamelling.

434 KITSCHELT, AUGUST, *Vienna*—Manufacturer.
Various metal articles, viz.:—A vase, a cross, and two candlesticks, cast in iron, from the drawings of F. Stache, in Vienna.
Table, cast in zinc. This table, with the candlesticks, &c., is represented in the Plate.
Flower-vase of bronze, cast in one piece.

Ornamental Bronzed Street Lamp. Designed by B. di Bernardis.

Toilet-table, fauteuils, and chairs of hollow wrought-iron tubes, with cast-iron ornaments. A group of these articles is represented in the Plate 163.

[The manufacture of articles in pewter, lead, copper, brass, pinchbeck, bell-metal, German silver, albata, bronze, gilt, silvered and plated metals, has its principal seat in Vienna. They are either articles for use or ornament. The former, of copper, brass, &c., are very substantially made, and not only supply the home market, but are also extensively exported. The export trade of Vienna in gold and silver fancy articles has for some years been considerable, great taste having been combined with solidity. Also, the manufacture of cast and embossed articles of bronze, gilt, is flourishing, and gives employment to a large number of workpeople.]

435 **Egger, J. B.**, *Villach, Carinthia*—Manufacturer.

Roll of pressed leaden pipe, 1,800 feet long, in one piece, weighing 983 lbs.

Two pieces of pressed leaden pipes (tinned).

These leaden pipes are especially worthy of observation, on account of their great length, thinness, and equality. They can be made of any length.

436 **Hirsche, Franz**, *Brünn, Moravia.*

Articles in pewter, viz., church-lamp, tea service, writing materials, chafing-dish, cooking vessel (a novelty).

Samples of ornaments and letters.

437 **Wagner, Franz**, *Prague*—Manufacturer.

Strong box of polished steel, weighing 270 lbs.

438 **Beitl, Franz**, *Prague*—Manufacturer.

Two iron strong boxes, weight 360 lbs. and 483 lbs.

439 **Dietrich, Joseph, Baron**, *Spital-on-the-Semmering, Styria*—Manufacturer.

An assortment of Russian scythes.

[The importance of these articles, as well as the prominent position of the manufacture of them in Austria, is generally known. The Austrian scythe and sickle find their way into almost every country in Europe, and also across the Atlantic. The reason of this is to be found in the excellence of the material, the lowness of price, and the care with which they have been made for centuries.

The principal seat of the manufacture is Upper and Lower Austria, Styria, and part of the Tyrol, which furnish nearly three-fourths of the whole number made.

Stadt Steyr, in Upper Austria, alone furnishes annually nearly two million scythes and sickles; and the whole production of 142 works in the monarchy (not including 34 scythe-factories in Lombardy) amounts to about seven million scythes, sickles, and straw-cutters.

Specimens are exhibited of various shapes and sizes used in the different countries.]

440 **Gatt, Alois**, *Erl, near Kufstein, Tyrol*—Manufacturer

A variety of scythes.

441 **Graber, Joseph**, *Weer, Unterinnthal, Tyrol*—Manufacturer.

An assortment of scythes.

442 **Grauss, Johann**, *Finsing, Tyrol*—Manufacturer.

An assortment of scythes.

443 **Hierzenberger, Gottlieb**, *Leonstein, near Stadt Steyr, Upper Austria*—Manufacturer.

Various scythes.

444 Offner, J. M., *Wolfsberg, Carinthia*—Manufacturers.
Different kinds of scythes and sickles.

445 Pamer, Sebastian, *Schalchen, near Mattighofen, Upper Austria*—Manufacturer.
Scythe and chaff-cutter of Styrian steel.

446 Penz, Johann, *Mühlerau, in the Zillerthal, Tyrol*—Manufacturer.
Different kinds of scythes.

447 Penz, Thomas, *Kleinboden, Tyrol*—Manufacturer.
An assortment of scythes.

448 Weinmeister, Gottlieb, *Spital-on-the-Pyhrn—Upper Austria*—Manufacturer.
Various scythes and sickles, of Innerberg, and cast steel.

449 Weinmeister, Josef, *Brühthal, near Leonsteim, Upper Austria*—Manufacturer.
An assortment of scythes.

450 Zeitlinger, Joseph, *Spital-on-the-Pyhrn, Upper Austria*—Manufacturer.
Different kinds of scythes.

451 Zeitlinger, Joseph Alois, *Eppenstein, Styria*—Manufacturer.
Different kinds of scythes as used in East Prussia, France, and Saxony.

452 Zimmermann's Heirs, Bertlina, *Mairhofen in the Zillerthal, Tyrol*—Manufacturer.
An assortment of scythes.

453 Feldbaumer, Peter, *Trofajach, Styria*—Manufacturer.
Various kinds of pickaxes, hatchets, axes, shovels, hoes, &c.

454 Lobkowitz, Prince Ferdinand, *Mixnitz, Styria.*
Various kinds of shovels and hoes.

455 Schmidlehner, Johann, *Neuzeug, near Stadt Steyr*—Manufacturer.
Various hatchets.

456 Dubsky, Count, *Lissitz, Moravia.*
Various kinds of iron-wire tacks, and ornamental wire tacks for decoration, &c.

457 Ernst, Peter, *Stadt Steyr, Upper Austria*—Manufacturer.
Tacks and brads (shoe-nails) assorted.

458 Falent, Michael, *Stadt Steyr*—Manufacturer.
Various kinds of forged nails.

459 Landerl, Leopold, *Stadt Steyr*—Manufacturer.
Iron nails of different kinds, made by machinery.

460 Vingert, Anton, *Stadt Steyr*—Manufacturer.
Tacks and brads (shoe-nails) assorted.

461 Weidl, Michael, *Stadt Steyr*—Manufacturer.
An assortment of nails, made by machinery.

462 Haller, Aloys, *Neuzeug, near Stadt Steyr*—Manufacturer.
Brass rings of different kinds.

463 Kranowither, Josef, *Neuzeug, near Stadt Steyr*—Manufacturer.
Pinchbeck rings of different kinds.

464 Poiger, Friedrich, *Stadt Steyr*—Manufacturer.
German-silver rings of different kinds.

465 Kurz, Carl, *Stadt Steyr*—Manufacturer.
Snaffle, curb, and buckles for horses.

466 Koller, Franz, *Steinbach, near Stadt Steyr*—Manufacturer.
Curry-combs of different kinds.

467 Mitterberger, Johann, *Sierninghofen, near Stadt Steyr.*
Shoe tips and heels.

468 Ring, Joseph, *Neuzeug, near Stadt Steyr*—Manufacturer.
Steels for striking lights, of different kinds.

469 Grabner, Franz, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps, of brass and iron.

470 Schwarz, Carl, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.

471 Schwarz, Franz, senior, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.

472 Schwarz, Franz, junior, *Molln, near Stadt Steyr*—Manufacturer.
Jews' harps.

473 Schwarz, Ignatz, *Molln, near Stadt Steyr*
Jews' harps.

474 Blumauer, Wilhelm, *Stadt Steyr*—Manufacturer.
Bells for horses, of different kinds.

475 Tomaschitz, Joseph, *Veldes, Upper Carniola*—Manufacturer.
Bells of various kinds for cattle; used among the Alpine agriculturists of Tyrol, Styria, Carinthia, and Carniola.

476 Pfleiderer, Johann, *Stadt Steyr*—Manufacturer.
Scales (balances) of brass.

477 Strunz's Widow, Joseph, *Vienna*—Manufacturer.
Samples of pins, needles, and buckles.

478 Cassel, Johann, *Vienna*—Manufacturer.
Shot-bags, powder-flasks, powder-measure, percussion-cap cases, hunting-pipe, fox-traps, lucifer-match-boxes, travelling lucifer-match-boxes, writing utensils, &c.

479 Buchberger, Josef, *Stadt Steyr*—Manufacturer.
Awls of different kinds.

480 Derfler, Johann, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.

481 Diltsch, Johann, *Stadt Steyr*—Manufacturer.
Awls of different kinds.

482 Hauser, Josef, *Stadt Steyr*—Manufacturer.
Gimlets of different kinds.

483 Kettenhüber, Josef, *Stadt Steyr*—Manufacturer.
Awls of different kinds.

484 **Kolm, Johann**, *Stadt Steyr*—Manufacturer.
Awls of different kinds.

485 **Metz, Georg**, *Stadt Steyr*—Manufacturer.
Gimlets of different kinds.

486 **Molterer, Cajetan**, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Awls of different kinds.

487 **Molterer, Chrisostomus**, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.

488 **Molterer, Georg**, *Stadt Steyr*—Manufacturer.
Awls of different kinds.

490 **Molterer, Mathias**, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls for shoemakers and saddlers.

491 **Molterer, Vincenz**, *Neuzeug, near Stadt Steyr*—Manufacturer.
Awls of different kinds.

492 **Nothhaft, Franz**, *Neuzeug, near Stadt Steyr*—
Awls of different kinds.

493 **Reindl, Johann**, *Stadt Steyr*—Manufacturer.
Gimlets of different kinds.

494 **Teuflmayer, Carl**, *Stadt Steyr*—Manufacturer.
A vice, screw-stock, dies, and taps.

495 **Beyer, Anton**, *Stadt Steyr*—Manufacturer.
An assortment of files and rasps.

496 **Lechner, Mathias**, *Stadt Steyr*—Manufacturer.
Files and rasps of different kinds.

497 **Nussbaumer, Leopold**, *Stadt Steyr*—Manufacturer.
Files and rasps.

498 **Preitler, Mathias**, *Stadt Steyr*—Manufacturer.
Files and rasps of different kinds.

499 **Reichl, Josef**, *Stadt Steyr*—Manufacturer.
Files of different kinds.

500 **Sonnleithner, Anton**, *Stadt Steyr*—Manufacturer.
Files and rasps of different kinds.

501 **Unzeitig, Franz**, *Stadt Steyr*—Manufacturer.
Files and rasps of various kinds.

501a **Fischer, Georg**, *Hainfeld, Lower Austria*—Manufacturer.
Files and crucibles.

502 **Vater, Franz**, *Neuzeug, near Stadt Steyr*—Manufacturer.
Files of different kinds.

503 **Alsterberger, Johann**, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

[The manufacture of cutlery in Austria has its principal seat in Stadt Steyr, Upper Austria, and its neighbourhood. Not only the great extent and importance of the manufacture, but, above all, the excellent quality of the article and the extraordinarily low price, have brought the cutlery of Stadt Steyr into almost universal use throughout the monarchy, and made all competition in the lower and middling kinds of table knives and forks and pocket knives almost impossible.

The wares universally known under the name of "Steyr Cutlery" are not produced by large manufacturing establishments, but principally by small master cutlers; and the division of labour, with respect to the handles, rivets, and blades, has been in practice for many years. A series of specimens of those knives and forks which are principally in demand is exhibited, and attention must be drawn more to the quality and cheapness of the articles than to their finish.

The manufacture has greatly increased, particularly in the past year.

Of fine cutlery, specimens are exhibited from some establishments in Steyr, as well as from Nixdorf, Bohemia.

Stadt Steyr also produces weapons, &c., on a large scale, and some samples are exhibited.

Finer kinds of cutting tools are made in Vienna, Linz, and other towns in large quantities.]

504 **Bauer, Josef**, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.

505 **Bley, Jacob**, *Stadt Steyr*—Manufacturer.
Razors of different kinds.

506 **Brehlmaier, Josef**, *Stadt Steyr*—Manufacturer.
Razors of different kinds.

507 **Bubenitsek, Josef**, *Hermannstadt, Transylvania*—Manufacturer.
Garden knives, &c.

508 **Daucher, Stefan**, *Untergrünburg, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

509 **Dernberger, Franz**, *Grünburg, near Stadt Steyr*—Manufacturer.
Garden knives of different kinds.

510 **Dietzl, Mathias**, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives and forks of different kinds.

511 **Doppler, Adam**, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

512 **Förster, Leopold**, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

513 **Frenkner, Anton**, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

514 **Fröhlich, Carl**, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.

515 **Fröhlich, Johann**, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.

516 **Grünwald, Josef**, *Neuzeug, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

517 **Haindl, Anton**, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

518 Helm, Aloys, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

519 Hofer, Philipp, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

520 Kaltenmark, Peter, *Linz, Upper Austria*,—Manufacturer.
Razors, and an assortment of knives and scissors.

521 Kerbler, Josef, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives and forks of different kinds.

522 Kranawitter, Johann, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of various kinds.

523 Lichtl, Johann, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

524 Lieder, Friedrich, *Stadt Steyr*—Manufacturer.
Dessert knives and forks of different kinds.

525 Löschenkohl, Carl, *Frattenbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

526 Löschenkohl, Johann, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.

527 Maderbaeck, Michael, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.

528 Miller, Romuald, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket-knives of various kinds.

osef, Sen., *Stadt Steyr*—Manufacturer.
Lance, hangers, hunting knives, and swords of different kinds.

530 Mitter, Josef, *Stadt Steyr*—Manufacturer.
Knives, razors, and scissors of different kinds.

531 Moser, Anton, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.

532 Moser, Anton, *Steinbach, near Stadt Steyr*—Manufacturer.
Penknives of different kinds.

533 Moser, Carl, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

534 Moser, Franz, *Steinbach, near Stadt Steyer*—Manufacturer.
Knives of different kinds.

535 Moser, Georg, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.

536 Moser, Josef, *Steinbach, near Stadt Steyr*—Manufacturer.
An assortment of knives.

537 Moser, Johann, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

538 Osterberger, Leopold, *Stadt Steyr*—Manufacturer.
Knives of different kinds.

539 Pichler, Johann, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

540 Pils, Carl, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

541 Pilss, Franz, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

542 Pilss, Gottfried, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Pocket-knives of different kinds.

543 Pilss, Michael, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

544 Pessl, Gottlieb, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

545 Pichler, Johann, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

546 Pfusterschmidt, Johann, *Neuzeug, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

547 Rapp, Mathias, *Stadt Steyr*—Manufacturer.
Table knives of different kinds.

548 Ressl, Jacob, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of various kinds.

549 Ressl, Mathias, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

550 Riedler, Johann, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

551 Riedler, Leopold, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

552 Rösler, Ignaz, *Nixdorf, Bohemia.*
An extensive assortment of razors, knives, and scissors, toothpicks, &c.

553 Rupprecht, Sebastian, *Stadt Steyr*—Manufacturer.
Razors of different kinds.

554 Salzwimmer, Philipp, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Table knives of different kinds.

555 Schindler, Simon, *Steinbach, near Stadt Steyr*—Manufacturer.
Knives of different kinds.

556 Schwinghammer, Simon Thadd, *Steinbach, near Stadt Steyr*—Manufacturer.
Pocket knives of various kinds.

557 Stierhofer, Alois, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

558 Stierl, Josef, jun., *Stadt Steyr*—Manufacturer.
Scissors of different kinds.

559 Stuckhart, Johann, *Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

560 Voith, Alois, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Cutlery of different kinds.

561 Wachter, Leopold, *Stadt Steyr*—Manufacturer.
Razors of different kinds.

562 Weichselbaumer, Josef, *Neuzeug, near Stadt Steyr*—Manufacturer.
Knives and forks of different kinds.

563 Weichselbaumer, Michael, *Sierninghofen, near Stadt Steyr*—Manufacturer.
Knives of various kinds.

564 Teufelmayer, Josef, *Untern Himmel, near Stadt Steyr*—Manufacturer.
A variety of surgical instruments.

566 Bachner, Franz, *Stadt Steyr*—Manufacturer.
An assortment of shoemakers' tools.

567 Grossauer, Alois, *Stadt Steyr*—Manufacturer.
A variety of shoemakers' tools.

568 Grossauer, Franz, *Stadt Steyr*—Manufacturer.
An assortment of shoemaker's tools.

569 Klement, Franz, *Stadt Steyr*—Manufacturer.
An assortment of tools of steel, for cabinet-makers, carriage builders, furriers, turners, &c.

570 Sailer, Josef, *Stadt Steyr*—Manufacturer.
Various tools for coachmakers, furriers, &c.

571 Welzibach, Kaspar, *Stadt Steyr*—Manufacturer.
Tools for coachmakers, comb-makers, furriers, cabinet-makers, &c.

572 Weiss, Johann, & Son, *Vienna*—Manufacturer.
Assortment of cabinet-makers', coopers', and carriage-makers' tools. Rosewood tool chest for amateurs, &c.

573 Wertheim, Franz, *Vienna and Scheibbs, Lower Austria*—Manufacturer.
An extensive variety of cabinet-makers', coopers', carriage-makers', leather-dressers', and turners' tools.

574 Brunner, Anton, *Vienna*—Manufacturer.
Samples of compass saws, &c.

575 Baecher, A. B., *Vienna*—Manufacturer.
Embossed silver ware: cups, goblets, salt-cellars, bread-baskets, oil and vinegar cruets, sets of knives, forks, and spoons; inkstands, &c.

[The paucity of works of this description sent to the Exhibition, which are, however, produced of very superior quality, in Vienna, Prague, Milan, and Venice, is probably a consequence of the political events and disturbances of the last few years.

The jewellery, gold and silver embossed and stamped articles of Vienna, enjoy a high reputation and considerable sale at home and abroad. The manufacture of gold articles on an extensive scale, originated in Prague; its gold and silver snuff-boxes having been everywhere approved of. The stamped silver articles of Vienna and Prague have met with great success. The manufacture of gold and silver wire alone gives employment in Vienna to a great number of men.]

576 Grohmann, Hieronimus, *Prague*—Manufacturer.
Gold trinkets; silver filigree casket, ornamented with large Bohemian garnets.
Bracelets and necklace of Bohemian garnets.

577 Ratzersdorfer, H., *Vienna*—Manufacturer.
A toilet glass in a massive wrought and embossed silver frame, weighing 135 ounces.

578 Wien, Löb, *Prague*—Manufacturer.
Silver filigree chessboard and men.

579 Berg, Franz, *Prague*—Manufacturer.
Knight with horse in bronze; animals fighting—a group in or-molu; pair of or-molu candelabra; crystal goblets; table lamp.

580 Bröse, Wilhelm, *Vienna*—Manufacturer.
A pair of or-molu candelabra, ornamented with porcelain.

581 Hollenbach, D., *Vienna*—Manufacturer.
Pair of or-molu candelabra.

582 Abele, Ferd., *Neuhurkenthal, Bohemia*—Manufacturer.
A chimney-glass, cut in facets, 88 inches high, 43 inches wide, in gold frame.

[The principal seat of the glass and mirror manufacture is Bohemia, which supplies more than half of the entire production of the whole empire.

The Bohemian set and unset coloured glass in imitation of precious stones for ornaments, &c., is equally an important article of exportation. Styria, Illyria, and Hungary, have likewise glass manufactories.

The articles exhibited will give a sufficient idea of the Austrian glass manufacture, and show its excellence. Some specimens of mirrors, blown and cut in facets, are remarkable on account of their great size and purity.]

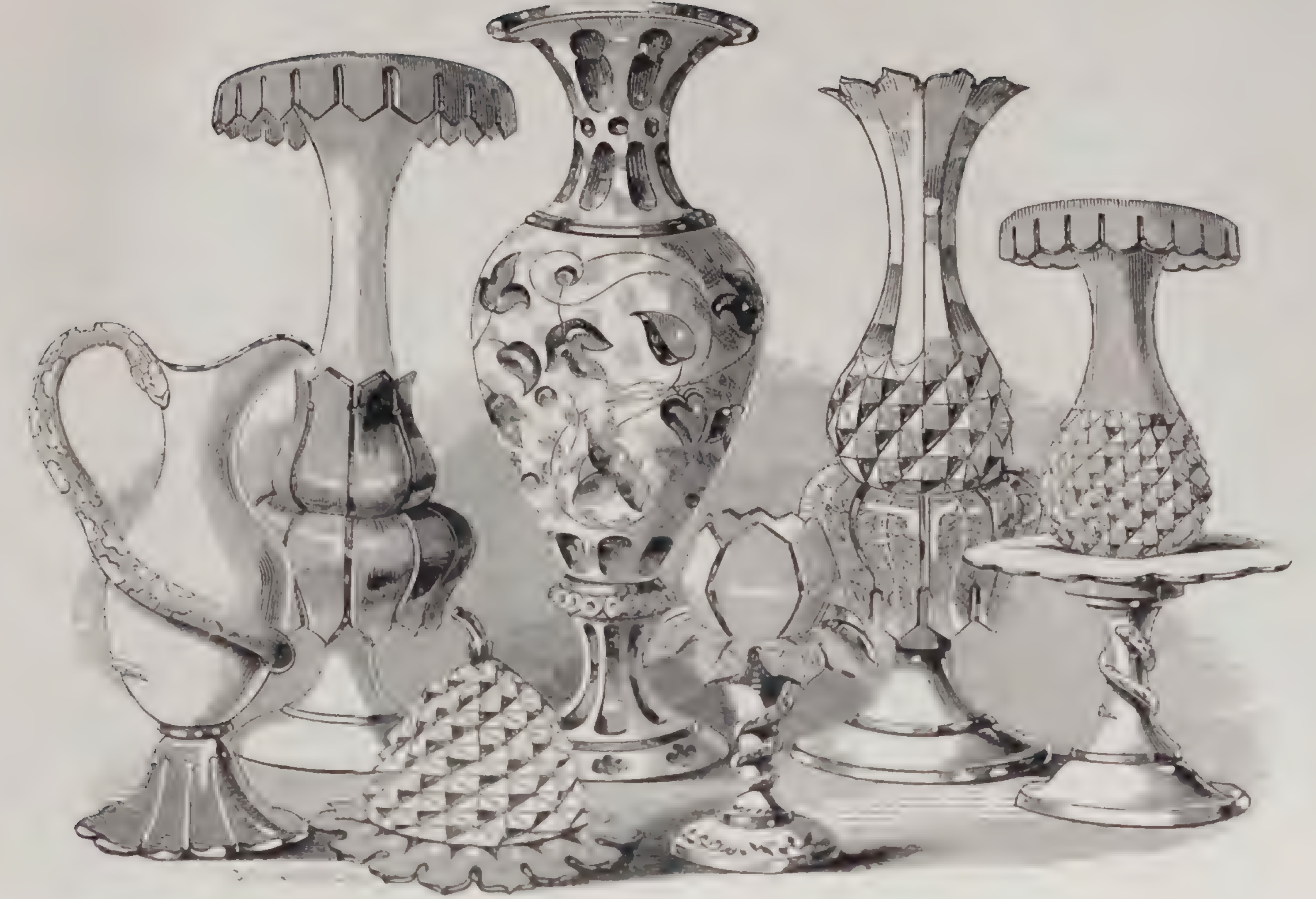
584 Buquoy, Count, *Schwarzthal and Silberberg, Bohemia*—Manufacturer.
Flower vases and inkstands of red hyalite glass.
Etrurian vases, flower vases, pen trays, and paper-weights of wavy hyalite glass.
Vases, dinner service, jugs of ruby glass, flagons of chrome-green glass, bottles, coffee-cups, flower glasses, goblets of white and enamelled porcelain glass.
A variety of crystal, cut, plain, and blown glass articles.

585 Czermak, P., *Prague*—Manufacturer.
Glass ware: flower and chimney vases, fruit dishes, bottles and flagons, sugar-basins, toilet bottles, &c.

586 Grohmann, Josef, *Kreibitz, Bohemia*—Manufacturer.
Glass ware: alabaster flower vases and cornucopia, centre-piece, flagons with gold ornaments, candlesticks.

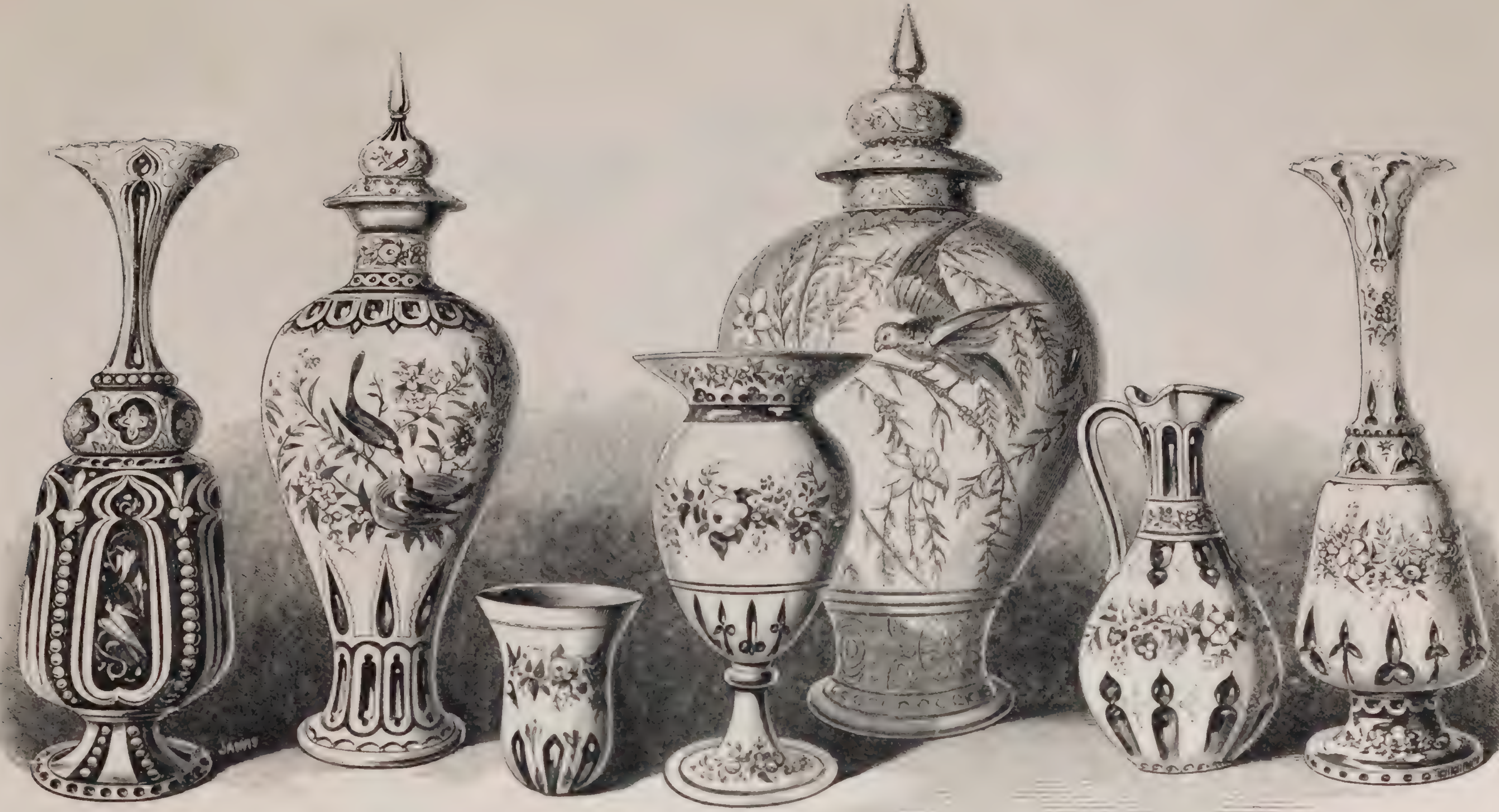
587 Harrach, Franz Ernst, Count Von, *Neuwelt, Bohemia*—Manufacturer.
A large assortment of glass ware: vases, jugs, flagons, decanters.
Wine bottles, scent bottles, goblets, cups.
Large candelabra, lustres, articles for the toilet, &c.

[The manufacture of glass is one of the most ancient and widely diffused branches of industry subsisting in

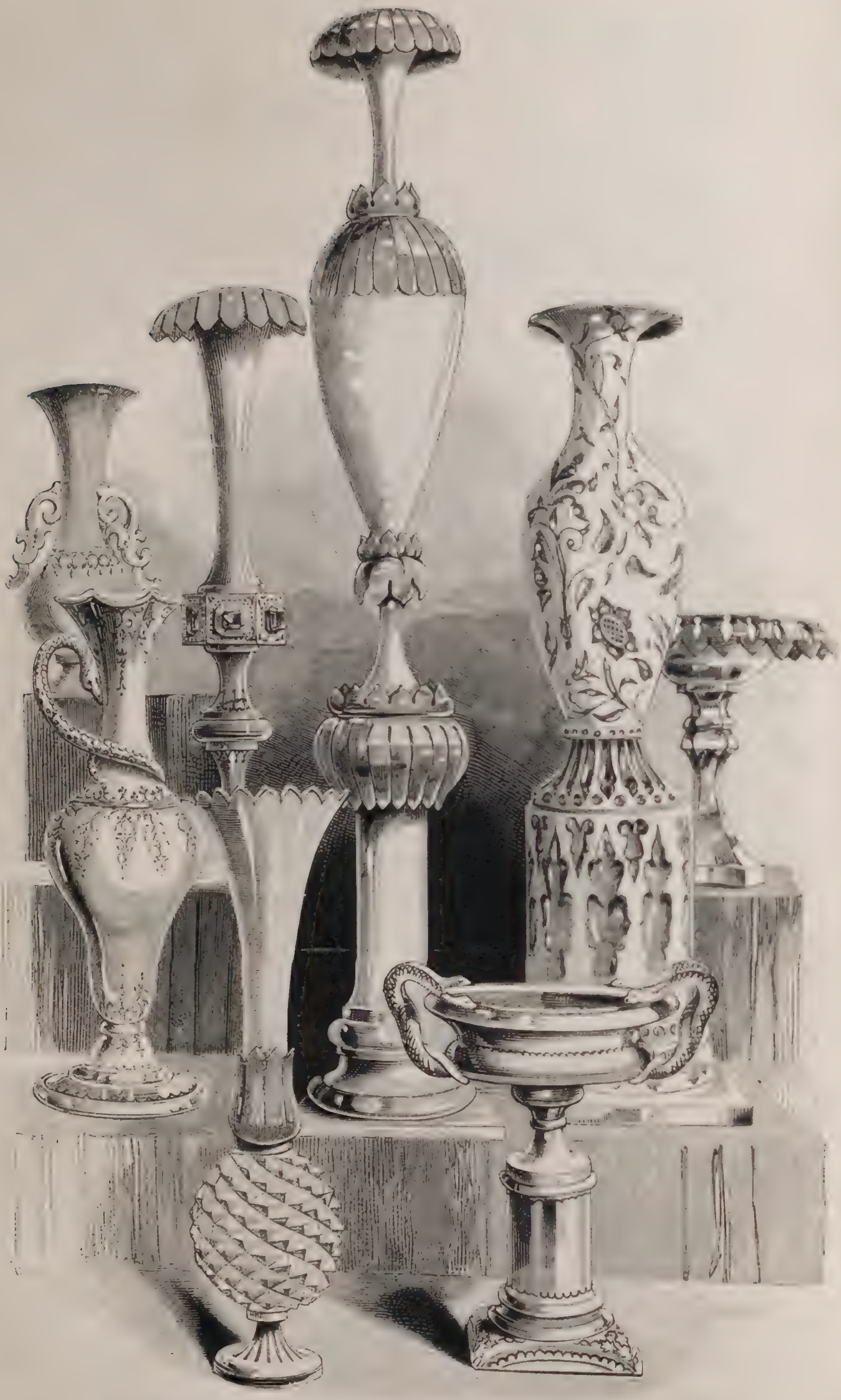


57

SPECIMENS OF ORNAMENTAL GLASS.



171. SPECIMENS OF ORNAMENTAL GLASS. M. HOFFMAN. PRAGUE.



129. A GROUP OF ORNAMENTAL GLASS VASES, PRODUCED BY MESSRS. HOFFMAN OF PRAGUE, AND MESSRS. MEYRS, NEPHEWS, OF BOHEMIA.

Bohemia, which has long carried on an extensive trade in glass and glass ware with all parts of the world. She still occupies the first rank among the provinces for the manufacture of glass and mirrors, and in the extent of production and excellence of the article surpasses all of them put together. In the year 1847, there were exported of hollow and table glass, 102,119 cwt.; cut and cast crystal glass and mirrors, 23,075 cwt.; beads, artificial gems, &c., 5,619 cwt. Of these exports, amounting to 130,813 cwt., the share contributed by Bohemia was, in the first of the above-named classes of productions, 91,047 cwt.; in the second ditto, 19,022 cwt.; in the third ditto, 5,224 cwt.: so that altogether 115,293 cwt. of articles, 88 per cent. of the entire aggregate of exports, and 87 per cent. of the entire value, represent the share of Bohemia. The glass and mirrors produced in Bohemia are estimated at more than double the sum of her foreign exports, since they amount to, at least, 220,000 cwt. Considerable sales of these very valuable manufactures are made to other provinces of the empire.

Next to Bohemia we may take the Venetian Provinces, celebrated for the beads of many kinds that they make, and which are partly cut in Bohemia.

Besides these provinces, only Lower Austria, Lombardy, and Upper Austria produce glass wares of the finer kinds, and these but in small quantities; for although they are exported to some little extent by Upper and Lower Austria, these countries do not produce them in quantities sufficient to meet the demands of their whole population. Other provinces limit their efforts to the production of ordinary descriptions of glass only, and are supplied with the finer sorts from Bohemia.

From a collation of the results for the whole Austrian monarchy, it appears that the glass trade produces annually 420,000 cwt. of glass ware and mirrors.

The careful adoption of the latest discoveries or processes, her richness in the raw materials entering into the production of glass, and the cheapness of its articles, have secured to Bohemia a most extensive foreign market for her wares, and up to the present time she has had no competitor to fear in this class of productions. The manufactories of the other provinces take those of Bohemia for their model, and are now making rapid progress in the development of their improved capacity and resources.]

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588 HEGENBARTH, AUGUST, *Meistersdorf, Bohemia*—Manufacturer.

Various glass drinking-cups.

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589 HELMICH, F. A., *Wolfersdorf, Bohemia*—Manufacturer.

Specimens of glass beads, knitting pearls, and scent bottles; the latter in alabaster, beryl, and turquoise.

Specimens of vases, cake-plates, butter-coolers, caskets, candlesticks, decanters, sugar-basins, &c., in alabaster, of various colours and designs.

589A HOTTINGER, ADOLPH, *Vienna*—Manufacturer.

Vases of crystal glass, cut.

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590 HOFMANN, WILHELM, *Prague*—Manufacturer. (Agents, J. & R. McCracken, 7 Old Jewry, London.)

Pair of colossal vases of alabaster and dim green glass, cut. Vases of opal, alabaster, or crystal glass cut, painted or enamelled. Smelling-bottles, jugs, cups, flower-glasses, candlesticks, boxes, beer-glasses, of similar manufacture.

Vases in various styles, cut. Bottles with glass and tray, jugs, German cups, water-sets, eau-sucrée. sets, &c.

Several of these articles are represented in the accompanying Plates 57, 171, &c.

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591 JANKE BROTHERS, *Blottendorf, Bohemia*—Manufacturers.

Glass ware: flower vases, goblets, centre-pieces, flagons, decanters, alabaster flasks, crystal candlesticks, &c.

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592 KITTL'S HEIRS, ANT., *Kreibitz, Bohemia*—Manufacturers. (Agent, William Meyerstein, 15 Watling Street, London.)

Different kinds of glass; flower vases with various ornaments.

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593 KUHINKA, FRANZ, *Katharinenthal, Hungary*—Manufacturer.

Goblets, decanters, national cups, liqueur glasses, &c.

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594 LÖTZ, WIDOW, & GERSTNER, *Deffernik, Bohemia*,—Manufacturers.

Glass centre-pieces, flower vases, flagons, jugs, and cups, tea and wine services, &c.

Wine and liqueur decanters, glasses, scent-bottles, &c.

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595 MEYR'S NEPHEWS, *Adolf and Leonorenhain, Bohemia*—Manufacturers.

Glass flower vases, pitchers, epergnes, &c., of various kinds and sizes.

Centre-pieces, candelabra, sugar-basins, jewel stands, flagons, milk jugs, jugs, candlesticks, decanters, &c. Several of these articles are represented in the accompanying Plate.

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596 KÖNIG, FRANZ PALLME, *Steinschönau, Bohemia*—Manufacturer.

Glass centre-piece, fruit dishes, sugar basins, dessert plates, crystal vases, decanters, a punch-bowl, antique-shaped chalice, &c.

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597 PELIKAN, IGNATZ, *Meistersdorf, Bohemia*—Manufacturer.

Glass goblets with covers, engraved and painted.

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598 VIVAT, BENEDICT, *Langerswald and Benedictthal, Styria*—Manufacturer.

Assortment of articles of crystal glass, vases, decanters, goblets, bottles, knife-rests, &c.

Various coloured, cut, engraved, embossed, and gilt glasses.

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599 ZAHN, JOSEF, sen., *Steinschönau, Bohemia*—Manufacturer.

A centre-piece, glass goblets, flower vases, flagons, &c.

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600 BIGAGLIA, PIETRO (late LORENZO BIGAGLIA), *Venice*—Manufacturer. (Agents, Fordati, Coxhead, & Co., 13 Old Jewry Chambers, London.)

Specimens of glass and enamelled beads. Imitation marbles in a variety of colours. Block of unwrought aventurine, 167 lbs. Ladies' ornaments, inkstands, knife and fork handles, paper weights, dice, snuff-boxes, cigar-holders, &c. Picture in mosaic, with a view of the mole of Venice. Gothic window of round filligree. Bottles and glasses in enamelled filligree. Various fancy articles in aventurine.

A Moor. Vases in various colours, in aventurine. A variety of glasses, smelling bottles, flower glasses, egg cups, tazzas, cakes, plates, eye glasses, &c.

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601 BLASCHKA & SONS, *Liebenau, Bohemia*—Manufacturers.

Paste, for artificial precious stones, beads, glass buttons, lustre pendants, articles in pinchbeck, &c.

602 Franke, Josef, *Kamnitz, Bohemia*—Manufacturer.

Glass hair ornaments: breast-pins, brooches, and miscellaneous articles of glass.

603 Pazelt, Anton, *Turnau, Bohemia*—Manufacturer.

Assortment of artificial stones of glass, cut.

604 Pfeiffer, Franz Anton, *Neudorf, near Morchenstern, Bohemia*—Manufacturer.

Paste for artificial precious stones, of different colours and designs.

606 Pfeiffer, J., & Co., *Gablonz, Bohemia*—Manufacturers. (Agent, Oscar Frauenknecht, 80 Bishopsgate Street Within, London.)

Specimens of cut-glass buttons. Glass breast-pins and brooches. Artificial precious stones.

Beads, chandelier pendants, flagons, candle rosettes, knife-rests, letter-weights (*mille fiori*), and various toys in glass.

607 Sarder, Peter, *Gablonz, Bohemia*—Manufacturer.

Assortment of beads, glass buttons, chandelier pendants, and artificial precious stones.

Rings and ear-rings, breast-pins, pins, hair-pins, brooches, scent-bottles, flagons, &c.

Bracelets, necklaces, beads, drops, seals, &c.

608 Schwefel, Anton, *Vienna*—Manufacturer.

Artificial human eyes of glass.

609 Spietschka, V., *Liebenau, Bohemia*—Manufacturer. (Agent, Charles Holland, 41 Finsbury Circus, London.)

Assortment of beads, pins, and hair ornaments of glass; bead necklaces; glass buttons and brooches; pinchbeck rings and ear-rings set with paste stones; artificial precious stones; chandelier drops.

Sample-book with drawings of chandelier drops, light rosettes, flagons, scent-bottles, &c.

610 Miesbach, Alois, *Vienna and Pesth*—Manufacturer.

Assortment of bricks, roofing-tiles, and draining-tiles of clay, from Inzersdorf, near Vienna, and Rákos, near Pesth.

Hollow bricks for building arches, made by machinery.

[This exhibitor has seven brick manufactories, giving direct employment to 4,880 persons, and producing annually 107 million bricks and tiles. His establishment at Inzersdorf on the Wiener Berg is the largest in the world: it covers 265 English acres, has 24,930 feet in length of drying sheds, 8,304 feet in length of moulding sheds, 446 moulding benches, 43 kilns capable of burning together 3,510,000 bricks at one time, five artesian wells, stabling for 300 horses, blacksmiths', carpenters', and wheelwrights' shops, besides an infant school for 120 children, and a hospital with 52 beds: it employs 2,890 persons, and turns out annually 65,500,000 bricks and tiles: 680 English acres of land supply a first-rate material for the manufacture, and contain sufficient for several centuries. The other six factories are provided on the same scale.]

611 Partsch, A., jun., *Theresienfeld, near Vienna*—Manufacturer.

Various samples of clay tobacco-pipes.

612 Bahr & Maresch, *Aussig on the Elbe, Bohemia*—Manufacturers.

Syderolite ware:—Flower vases, baskets, figures, tea-services, fruit-dishes, pier-tables, wall and table candlesticks, jugs, centre-pieces, pipe-bowls, paper-weights, busts, &c.

[The manufacture in Austria of pottery, syderolite ware, Wedgwood ware, terra cotta, bricks, &c., has made considerable progress within the last ten years, and has now become of importance. The exportation of earthenware, particularly *viâ* Trieste, has constantly increased. Bohemia takes the lead in this department.

Still more striking is the progress made by Bohemia in the manufacture of porcelain, in consequence of its coming into more extensive use. With solidity, purity, whiteness, and power of resisting sudden changes of temperature, the Austrian porcelain combines tastefulness of design and painting, and thus insures for itself an honourable place among the works of industry.]

613 Huffzky's Widow, Vincenz, *Hohenstein, near Toplitz, Bohemia*—Manufacturer.

Terralite-ware:—Flower-pots, centre-pieces, cups, milk-jugs, candlesticks, fruit baskets, dessert plates, &c. Russian monument.

[The quality of the articles manufactured in that description of earthenware which resembles the pottery called Wedgwood ware (syderolite, terralite, stone-clay), is constantly improving. An excellent raw material, supplied by a clay found in the vicinity of Wildstein, is principally used in the making of stone jars for mineral waters, and to a smaller extent also in that of utensils for various technical purposes.]

614 Schiller & Gerbing, *Bodenbach, near Tetschen-on-the-Elbe, Bohemia*—Manufacturers.

Syderolite ware:—Centre-pieces, flower-vases, hunting and wine jugs, inkstands, butter dishes, tea and coffee services, letter-weights, busts, figures, &c.

615 Imperial Porcelain Manufactory, *Vienna.*

Letter-weights, groups, figures, of porcelain.

Vases, plates, dishes, sauce tureens and stands, punch-bowls, casseroles, compotiers, wine coolers, large vase and stand, fruit dishes, ice pail, letter-weights, inkstand, a table, coffee cups, groups, figures, paintings, &c.

616 Bagatti-Valsecchi, Pietro— *Milan.*

Enamel painting on glass, representing Lucia in Manzoni's "Promessi Sposi."

Painting on porcelain, representing "Rafael's studio," after Podesti.

Enamel paintings on metal, "Magdalene," "Madonna," and "Head of the Magdalene."

Painting on porcelain, "Madonna and Child, surrounded by a garland of flowers."

Painting on porcelain, "Valenzia Gradenigo before the Inquisitors," from Venetian history, after Hayer.

"An Odalisque," on porcelain.

"Madonna," on earthenware.

617 Fischer, Christian, *Pirkenhammer, Bohemia*—Manufacturer.

A large assortment of dinner, tea, and coffee services, vases, toilet service, ink-stands, fruit-dishes, figures, &c., of porcelain.

618 Fischer, Moritz, *Herend, Hungary*—Manufacturer.

Vases; dinner, tea, and coffee services; candlesticks, coffee-cups, &c., of porcelain.

619 Haas, August, *Schlaggenwald, Bohemia*—Manufacturer.

Vases, breakfast and dinner services, &c., of porcelain.

620 Haidinger Brothers, *Elbogen, Bohemia*—Manufacturers.

Dinner, coffee, and tea service, portable service, tea-caddy, coffee cups, bread-baskets, writing materials, milk-pots, vases, &c., of porcelain.

Chemical vessels of porcelain.

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621 Hardtmuth, Ludovig & Carl, *Budweis, Bohemia*—Manufacturers.

Dinner, coffee, and tea services, of stone-ware.

Earthenware vessels, for chemical manufactories.

[The manufacture of common crockery-ware is still, although extensive, very imperfect with respect to quality. It employs about 7,000 master potters.]

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622 Hübner, Josef, *Gablonz, Bohemia.*

Porcelain pipe-bowls, painted.

A painting, "Varus, the Roman general, throwing himself upon his sword in the Teutonic forest."

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623 Kriegel & Co., *Prague*—Manufacturers.

Vases, dinner service, tea and coffee service, figures, busts, cups, inkstands, &c., of porcelain.

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624 Minitzek, Count Stanislaus Von, *Frain, Moravia*—Manufacturer.

Vases, centre-pieces, coffee and tea-pots, plates, chamber candlesticks, &c., of stoneware.

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625 Nowotny, August, *Alt-Rohlau, near Carlsbad, Bohemia*—Manufacturer.

Tea and coffee services of stoneware.

Vases, flower-pots, dinner and coffee sets, and figures, of porcelain.

[The manufacture of stoneware and delft is carried on to a considerable extent in Bohemia and Lower Austria, and partially in Moravia also.

In the manufacture of porcelain, the productions of the state factory at Vienna are pre-eminent in point of elegance of design and excellence of fabric and workmanship. They are worthy to be classed with the productions of Sèvres. This branch of Austrian industry is more widely diffused throughout Bohemia than in the other provinces of the empire. The annual value of this manufacture exceeds one million and a quarter of florins.

Other branches of industry, more or less directly connected with it, such as the enamelling of the ware, the manufacture of crucibles, artificial stone, grindstones, stone and marble slabs, &c., yield articles that are included in the Wedgwood pottery.]

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626 Portheim, A. P., & Son, *Unter Kodau, Bohemia*—Manufacturers.

Porcelain centre-piece and dinner service.

Tea and coffee services, bread-baskets, dessert plates, vases, and inkstands.

Assortment of figures, &c.

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627 Quast, Johann, *Prague.*

Painted china vase and plates.

A painted china slab, representing "The Last Judgment."

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628 Zasche, Johann, *Vienna*—Painter.

Painting on porcelain, "Madonna," after Carlo Dolce.

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629 Batka, Wenzel, *Prague, Bohemia*—Manufacturer.

Two chests of drawers for apothecaries.

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630 Colombo, Giovanni, *Milan*—Manufacturer.

A loo table, inlaid with tortoiseshell, gold, and silver.

631 Gröger, Franz, *Vienna*—Manufacturer.

Ebony cabinet, with statuettes in ivory (representing the Emperors of the House of Hapsburg), and ornaments in stone mosaic.

Work-box with malachite and ivory ornaments.

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632 Knill, Johann, *Vienna*—Manufacturer.

Billiard-table, with balls and cues.

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633 Leistler, Carl, & Son, *Vienna*—Furniture and Inlaid Flooring Manufacturers.

The furniture and flooring for a suite of four rooms, viz.:—

Dining-room.—Zebra-wood dining table for forty persons, sideboard, and set of 36 chairs. Massive oak flooring.

Library.—A Gothic bookcase, of oak, presented to Her Majesty the Queen by His Majesty the Emperor of Austria. A bookcase of Austrian and Hungarian ash, in the Renaissance style. A table, 6 chairs, and easy chair, to match. Inlaid flooring.

Drawing-room.—Zebra-wood loo table, 6 ft. 3 in. in diameter; another, 8 ft. 10 in. do.; corner table, console table, 2 occasional tables, revolving picture stand, 2 easy chairs, and set of 4-arm and 8 other chairs. Massive oak flooring. Mahogany folding-door, leading to

Bed-room.—Zebra-wood bedstead with furniture, a prie-Dieu, 2 Italian cupboards, 2 stools, sofa, sofa-table, console table, carved flower stand, looking-glass frame, 2 easy chairs, and set of 8 chairs. Inlaid flooring.

Ante-room.—An oval table of walnut. Loo table of rosewood. Or-molu oval table. Two picture frames. Small crucifix.

The design for the Queen's bookcase was made by Mr. Bernardo di Bernardis, architect, assisted by Mr. Joseph Kranner, of Prague.

The rest of the furniture was designed solely by Mr. Bernardo di Bernardis.

The gimp, fringe, and tassels, were manufactured by Mr. Franz Huber, of Vienna.

Specimens of inlaid flooring, veneered and inlaid.

[One-third, or 35,307,000 Lower Austrian chains, of the entire soil of Austria, is covered with forests, which furnish yearly the quantity of 17,000,000 cubic cords (42,500,000 cords of Lower Austria) of wood of every description. The disproportionate excess of forest to the whole area of the soil in some provinces, combined with the diversity of the wages of labour, as well as of the means and facilities of transport or carriage prevailing in others, and, lastly, the irregularly distributed demand for wood for purposes of mining, of glass-houses, of stationary and locomotive engines, as well as of steam-vessels, are among the causes which have occasioned, on the one hand, the extraordinary difference in the price of wood to be remarked as between various localities in the monarchy, where it is largely consumed (a difference ranging in some instances even to 600 per cent.), and on the other hand have given rise to the necessity for importing wood for building purposes, and even for fuel, from abroad. These imports comprise, for the most part, the quantity required for the use of Lombardy, a province which, by the necessities of its geographical position, is compelled to draw its supplies of wood from Switzerland and Piedmont. Whilst the navigation of the Danube affords the means of easy transport of building timber and fuel down that stream, from South Germany, and especially of that large supply of firewood necessary for the Imperial capital, on the northern and eastern frontiers of the empire, the rivers Elbe, Oder, Vistula, Sereth, and Danube, afford so many channels for conveying away the wood and timber in which the frontier provinces are so rich. Although the great bulk of these exports was in rough wood, the exportation to the Danubian principalities of the planks produced in the Bukowina and in Transylvania, and of staves from the shores of Croatia, to Italy, France, and North America, constitutes a considerable element in their entire value.

The preparation of wood for agricultural and domestic utensils, for casks and the like ordinary uses, appertains usually to the smaller trades, and seldom forms the object of any traffic beyond that which is established by the demands of the locality itself. The manufacture, therefore, of such common wooden articles as are here alluded to, on an extended scale, may seem scarcely worthy of mention; and yet the yearly exports of common articles of wood, such as casks, shovels, rakes, wheelbarrows, agricultural and gardening tools, from 1843 to 1847, averaged a yearly value of 308,000 florins.

The finer works in wood are made, some of them, by certain of the larger manufacturers; but, for the most part, they constitute the employment of whole districts and valleys in the mountains. This sort of trade is widely spread over Bohemia, the Tyrol, and Upper Austria, and to some extent also in Hungary.

Architectural carpentery is carried on in the towns on a very considerable scale. Although several large establishments of this kind exist in the more populous parts of the empire, their productions are not calculated to meet more than the local demand for them. Within these very few years a factory has been established at Vienna to produce doors, lintels and window frames, &c., both by machinery and by hand, and being in connection with a factory of inlaid floorings and a furniture warehouse, forms a portion of the establishment of the present exhibitors.

The manufacture of inlaid and mosaic floorings has lately increased in an extraordinary degree. Vienna, Prague, Budweis, Plass, Dobrzisch, and also Dernes in Hungary, supply works of this kind in large quantities and of increasing perfection.

The following articles in this furniture are illustrated in the accompanying Plates 76, 87, 78, 54, 79, 84, 69, 74.

The material of much of this furniture is a beautiful zebra wood. The carving is extremely rich, bold, and massive. Much of the ornament is elaborated to a high degree, and of this the illustrations will assist to convey an idea. The state bed is ornamented with medallions in porcelain, and massive fringe and hangings. The chairs are also ornamented with fringe, tassels, and gimp. The sideboard has two fine candelabra, by Hollenbach, of Vienna, as its lateral ornaments.]

634 Lechner, Franz, *Vienna*—Manufacturer.

Walnut-tree easy chair, stuffed and covered with Utrecht velvet.

Oak balzac, stuffed and covered to match.

635 Mentasti-Belia Brothers, *Milan*—Manufacturer.

Oblong square table, with inlaid work representing Napoleon crossing Mount St. Bernard.

A prie-Dieu, with inlaid work.

Various specimens of cornices in marble.

636 Moschini, Paolo, *Cremona*—Manufacturer.

A writing-desk and table.

A lady's toilet-table, covered with leather, and inlaid.

A small cabinet table. This table is represented in the Plate, together with an ornamental table and articles cast in zinc, belonging to a previous exhibitor.

637 Palhueber, Vinzenz, *Vienna*—Manufacturer.

Inlaid Gothic work-table, and a basket.

638 Rietsch, F. G., *Bohmisch-Rudoletz, Moravia*—Inventor.

Model of a ship-table. Provisionally registered.

638a Speluzzi, —, *Milan*.

Mosaic table.

639 Rosani Brothers, *Brescia*—Manufacturer.

A secretaire and a small oblong table, of American maple, with inlaid and mosaic work.

640 Staudinger, Anton, *Vienna*—Manufacturer.

Furniture: Buhl table of rosewood, book-shelves, sofa, chairs, &c.

[Cabinet-making and the manufacture of furniture flourish in Vienna, Prague, and Milan, above all other towns of the monarchy. The perfection of these works of cabinet-making, and the comparatively low prices demanded, not only ensure for them the command of the entire home market of the monarchy, but are already establishing a large export trade.

The manufacture of buhl and other fancy articles constitutes a special branch of industry in Milan, and, under the name of "Intarsiatura," has been carried on there for centuries. These articles, as well as the Vienna turnery and gilt carving, are of an excellent description, and are also exported to great advantage.]

641 Thonet, Michael, *Vienna*—Manufacturer.

Furniture:—Sofas. Easy chairs. Arm-chairs.

Stand of rosewood and walnut wood.

Specimens of inlaid floorings.

A small round table of rosewood. The above are variously inlaid with metal, tortoise-shell, and mother-of-pearl.

642 Klanner, Franz, *Vienna*—Manufacturer.

Different kinds of fancy cabinet-work.

Tea-caddies, sugar-caddies, work-boxes, reading-desks, travelling looking-glasses, candle-screens, &c.

643 Becker & Kronik, *Vienna*—Manufacturers.

Screen of japanned wood.

Fire-screen covered with papier-maché.

Papier-maché tables and cups.

Cups of japanned tin.

Two vases, designed by M. de Bernardis, architect. One of these vases is represented in the cut on page 1041.

644 Hofrichter, Carl, *Reichenau, Bohemia*—Manufacturer.

Papier-maché tobacco-boxes; spice and sugar-boxes; pincushions, boxes, &c.

645 Behr, Carl, *Prague, Bohemia*—Patentee and Manufacturer.

A column, a pedestal, and a box, as samples of artificial marble.

Samples of gilt wood, which will bear washing.

Liphothanic compositions.

645a Kölbel, B., *Vienna*—Carver and Gilder.

A gilt wooden frame for looking-glass or picture. Specimens of frame ornaments.

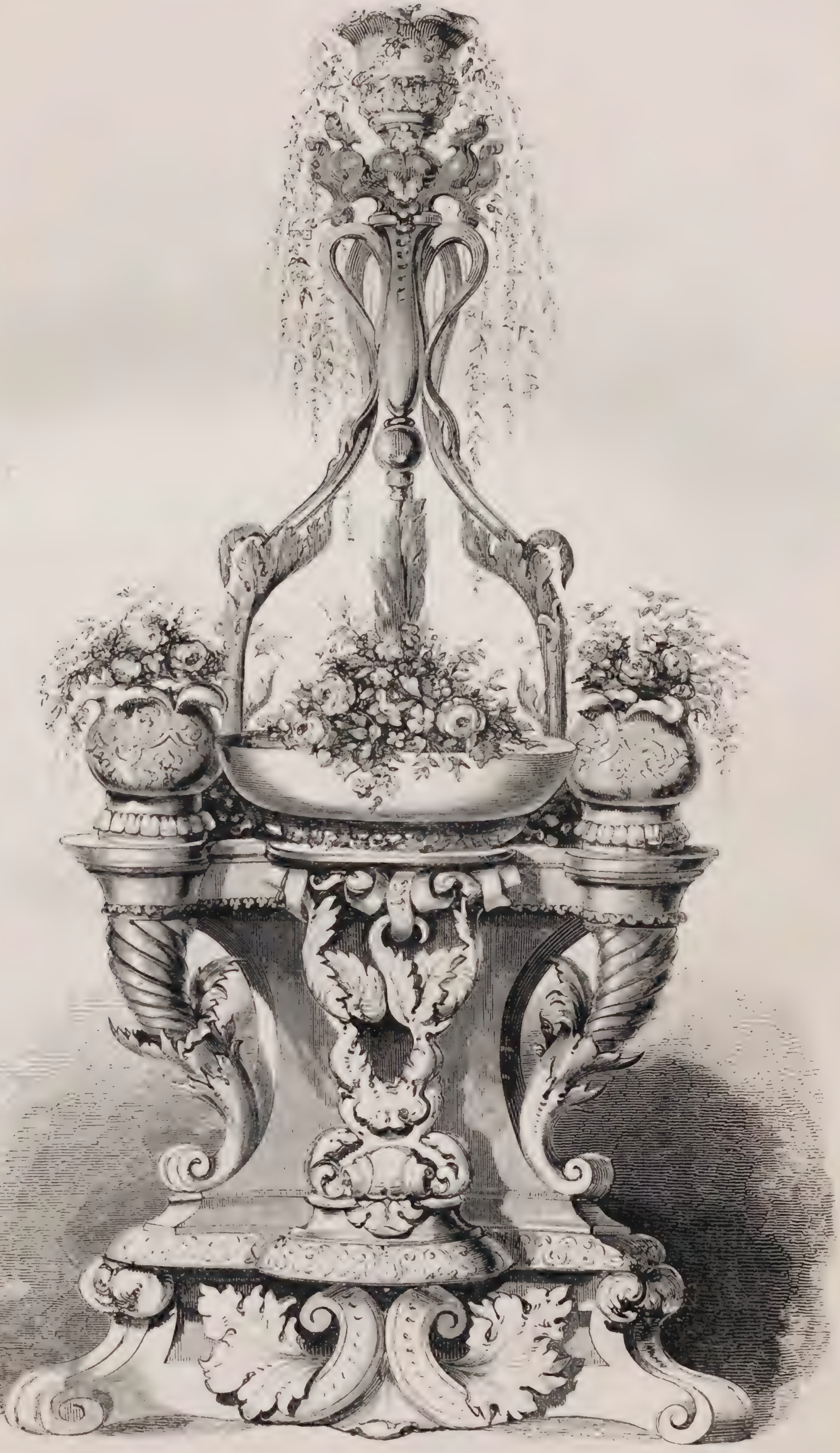
646 Aph, Friedrich, *Vienna*—Manufacturer.

A flower-screen of bamboo and cane.

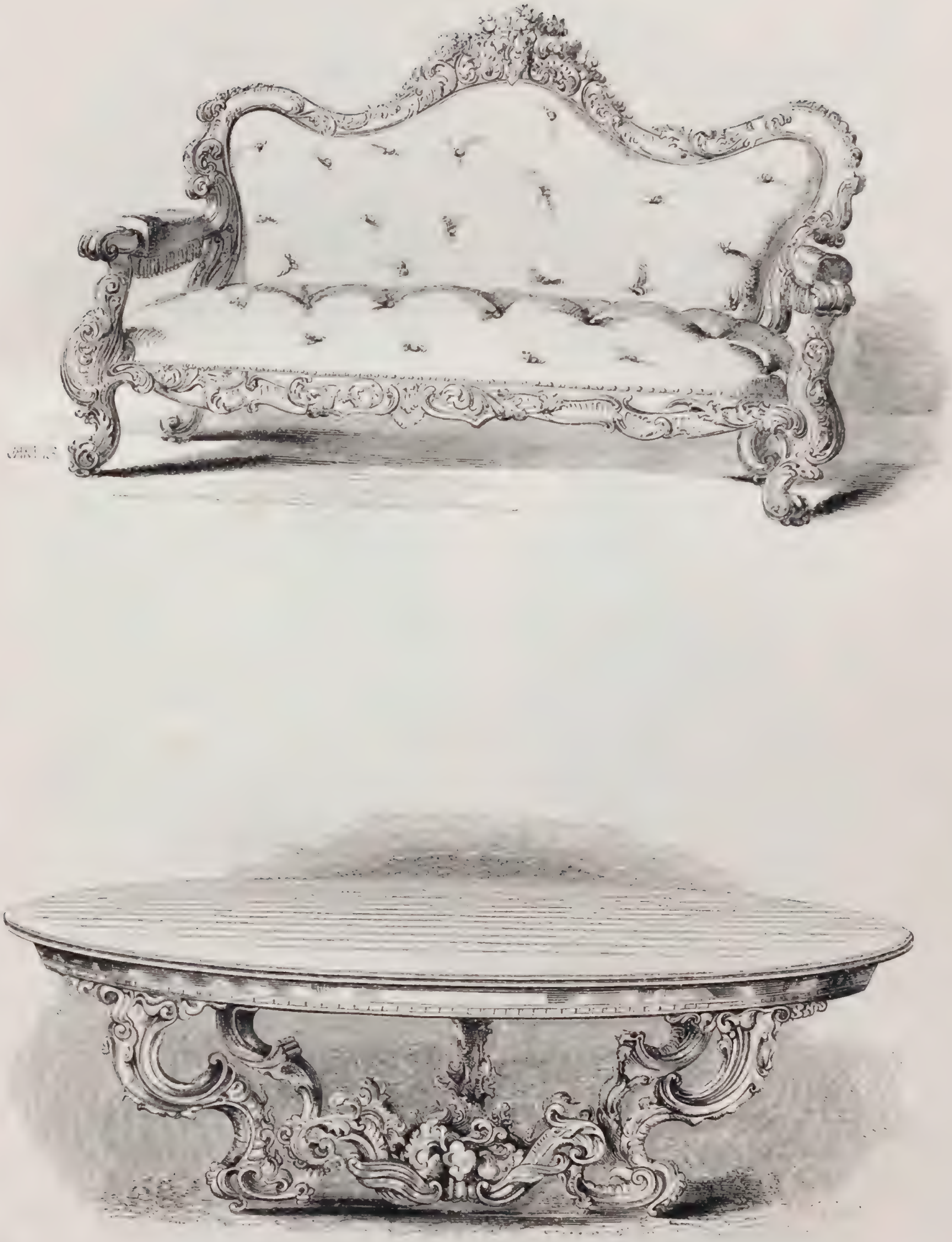
A stand for a figure and flowers, designed by M. de Bernardis. This stand is represented in the accompanying Plate 161.

647 Franzony, A., *St. Wolfgang, Ischl, Upper Austria.*

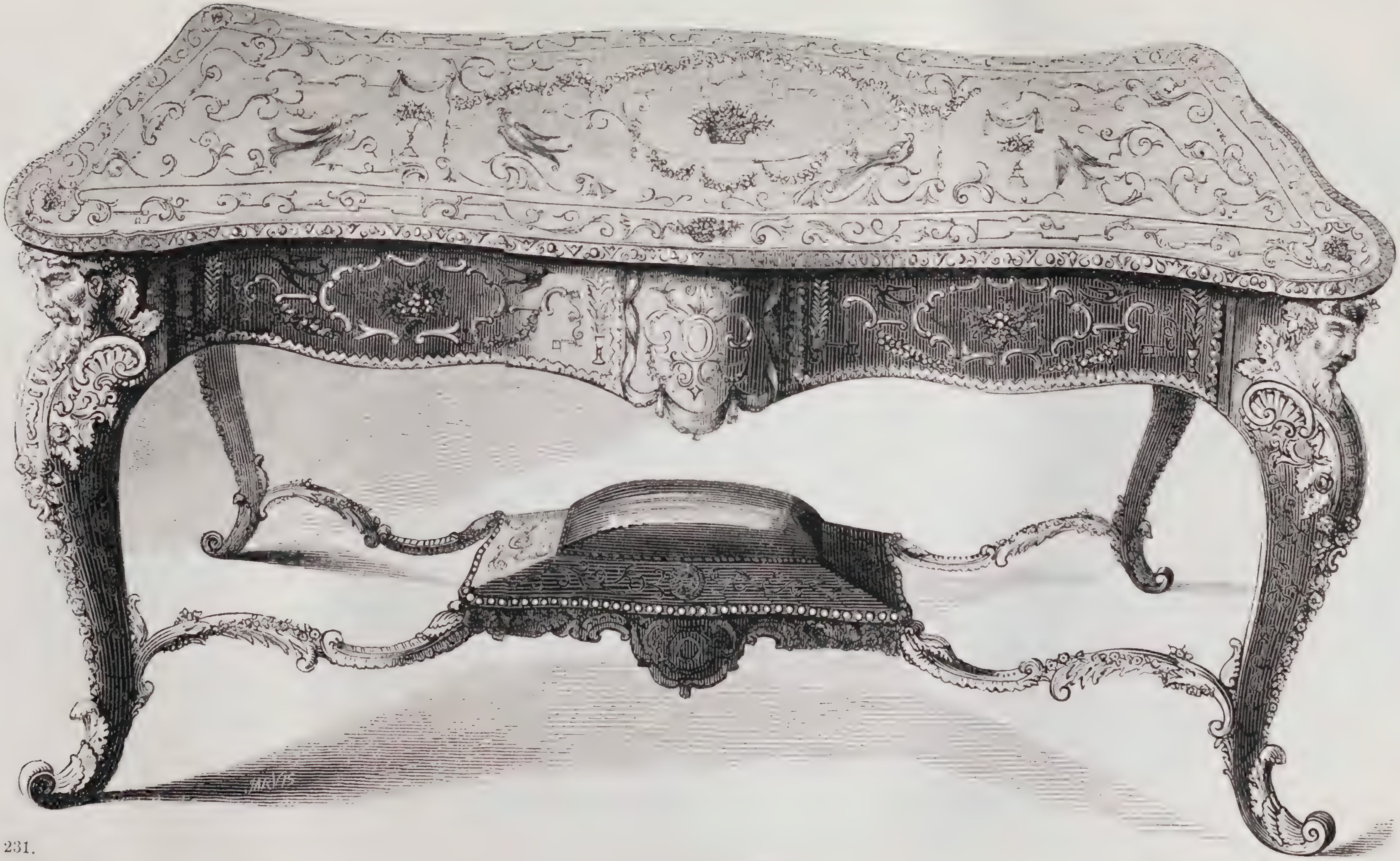
Flower-table.



161. SCULPTURED FLOWER STAND. EXECUTED BY M. AFH. DESIGNED BY M. B. BERNARDIS. VIENNA.

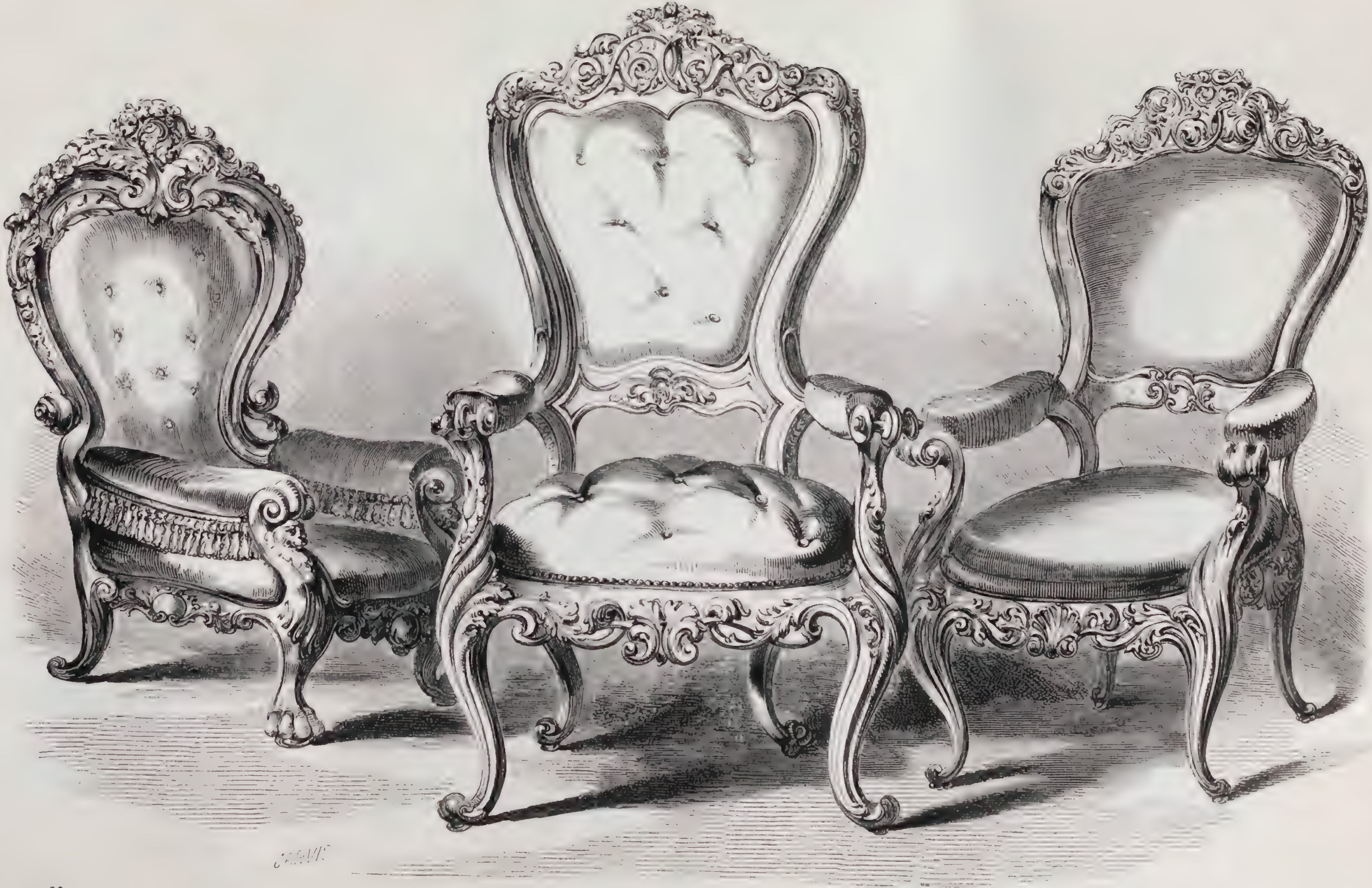


SOFA AND TABLE, AUSTRIAN FURNITURE. MESSRS. LEISTLER, VIENNA.

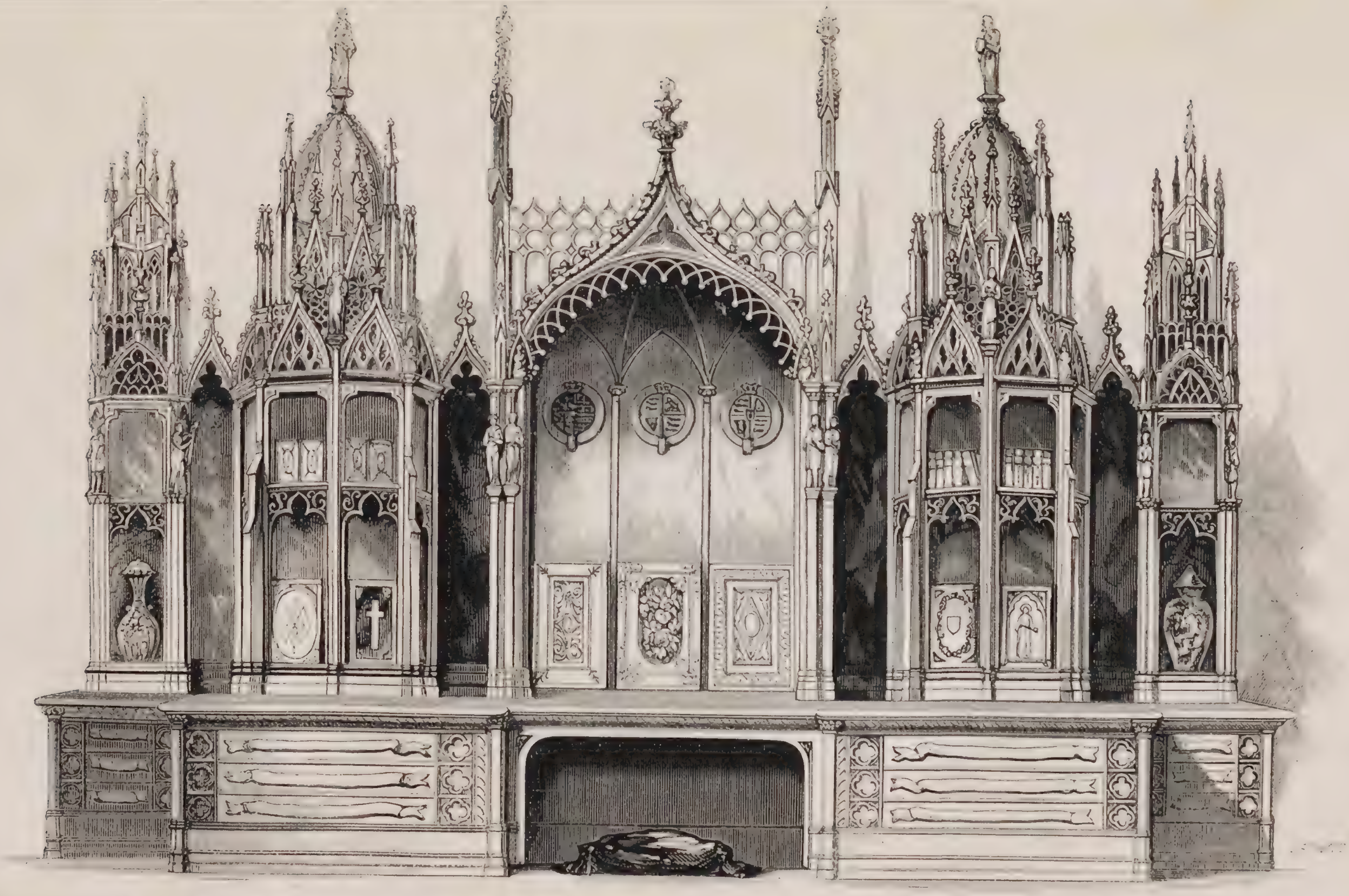


231.

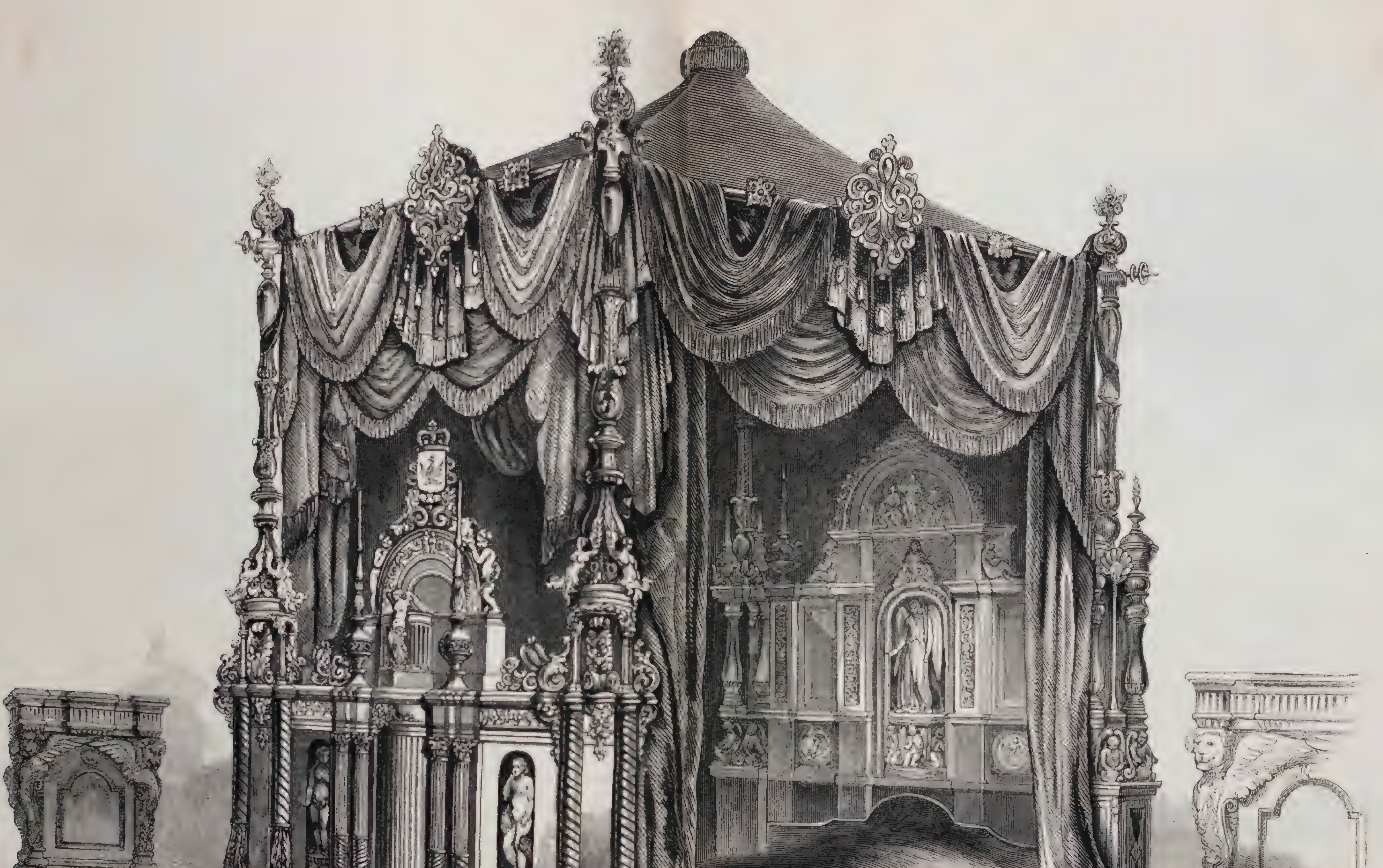
AN INLAID TABLE. AUSTRIA.



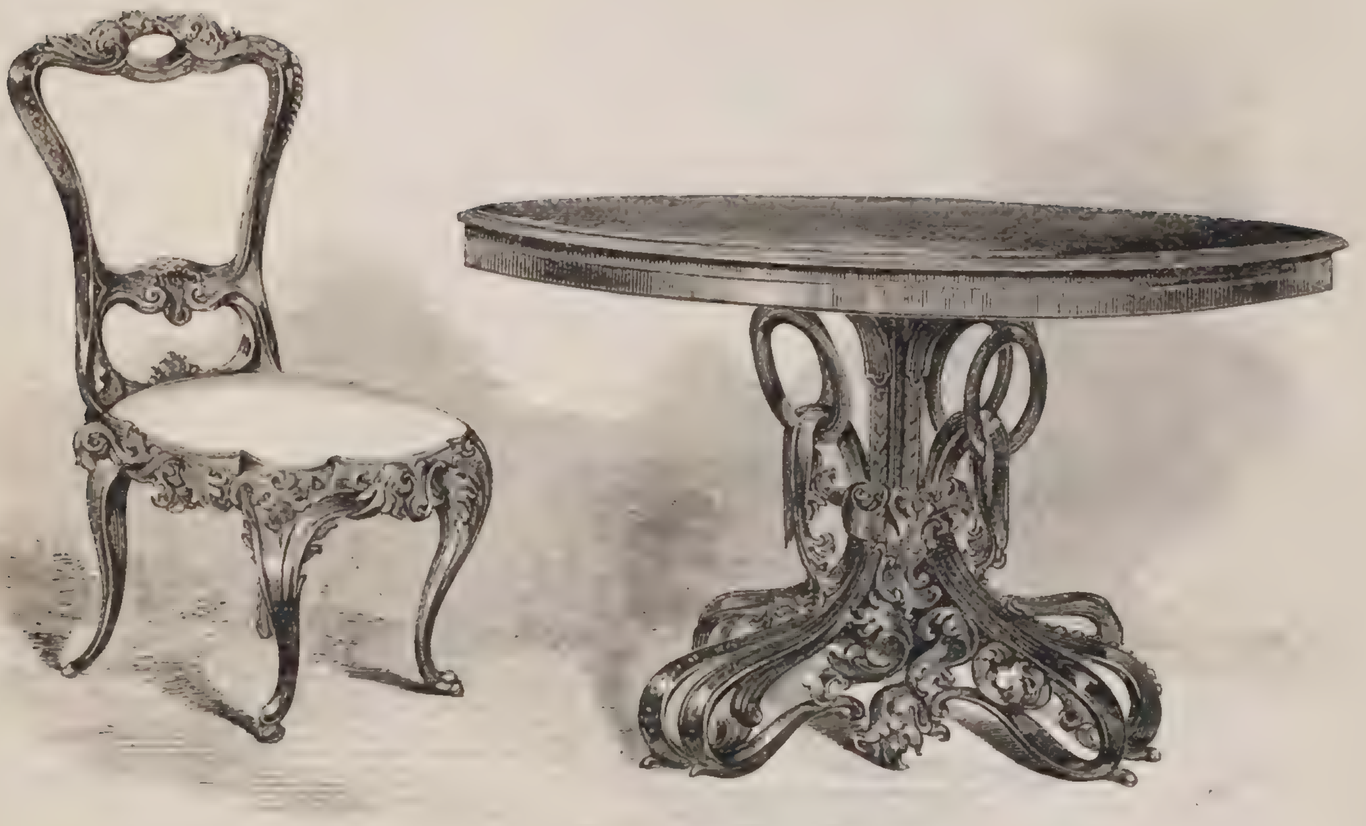
AUSTRIAN FURNITURE.



131. GOTHIC BOOKCASE IN CARVED OAK. PRESENTED TO HER MAJESTY THE QUEEN OF ENGLAND BY HIS MAJESTY THE EMPEROR OF AUSTRIA. DESIGNED BY B. BERNARDIS AND J. KRANER, OF VIENNA. EXECUTED BY MESSRS. CARL LEISTLER AND SON, VIENNA.



STATE BED. AUSTRIAN FURNITURE.



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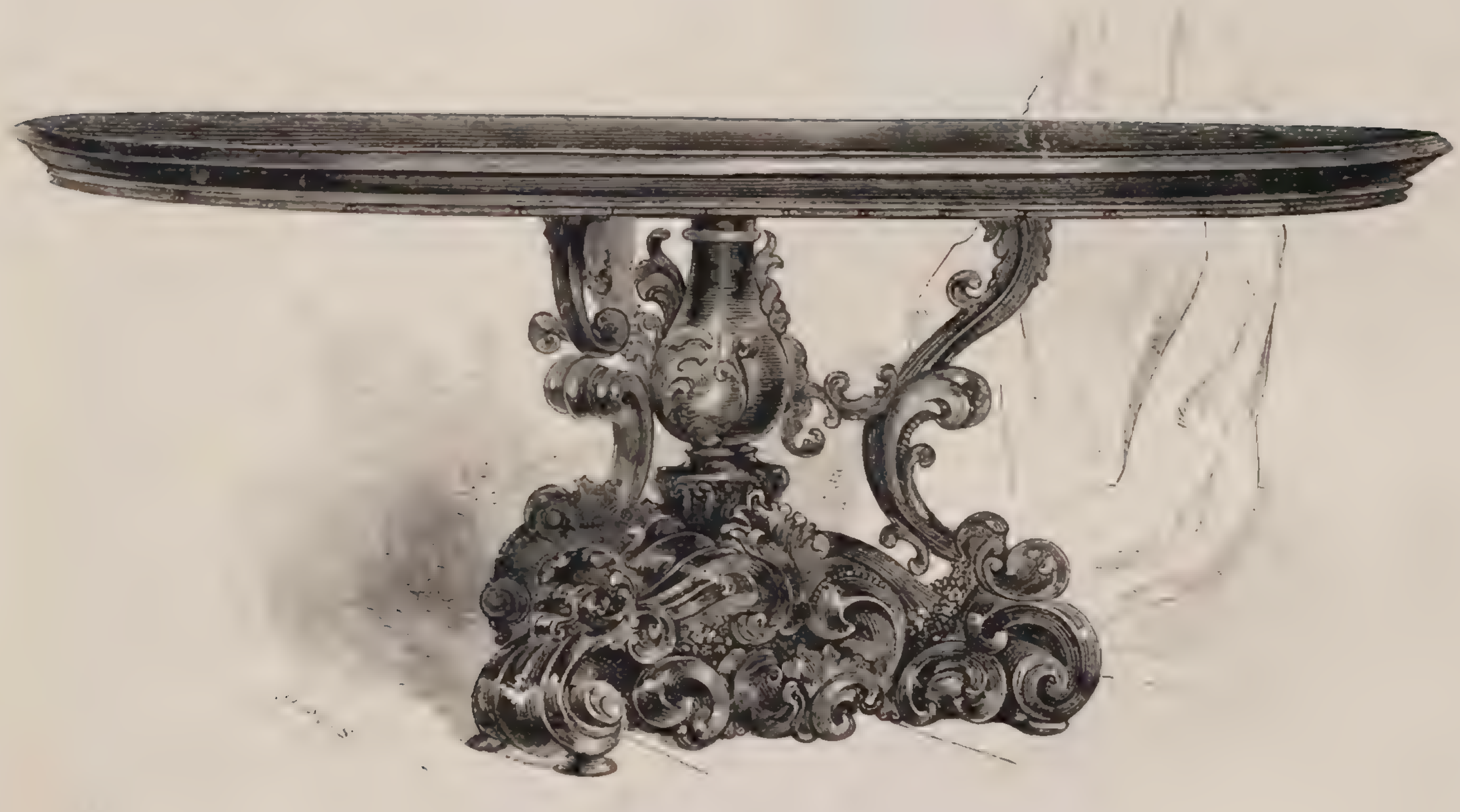
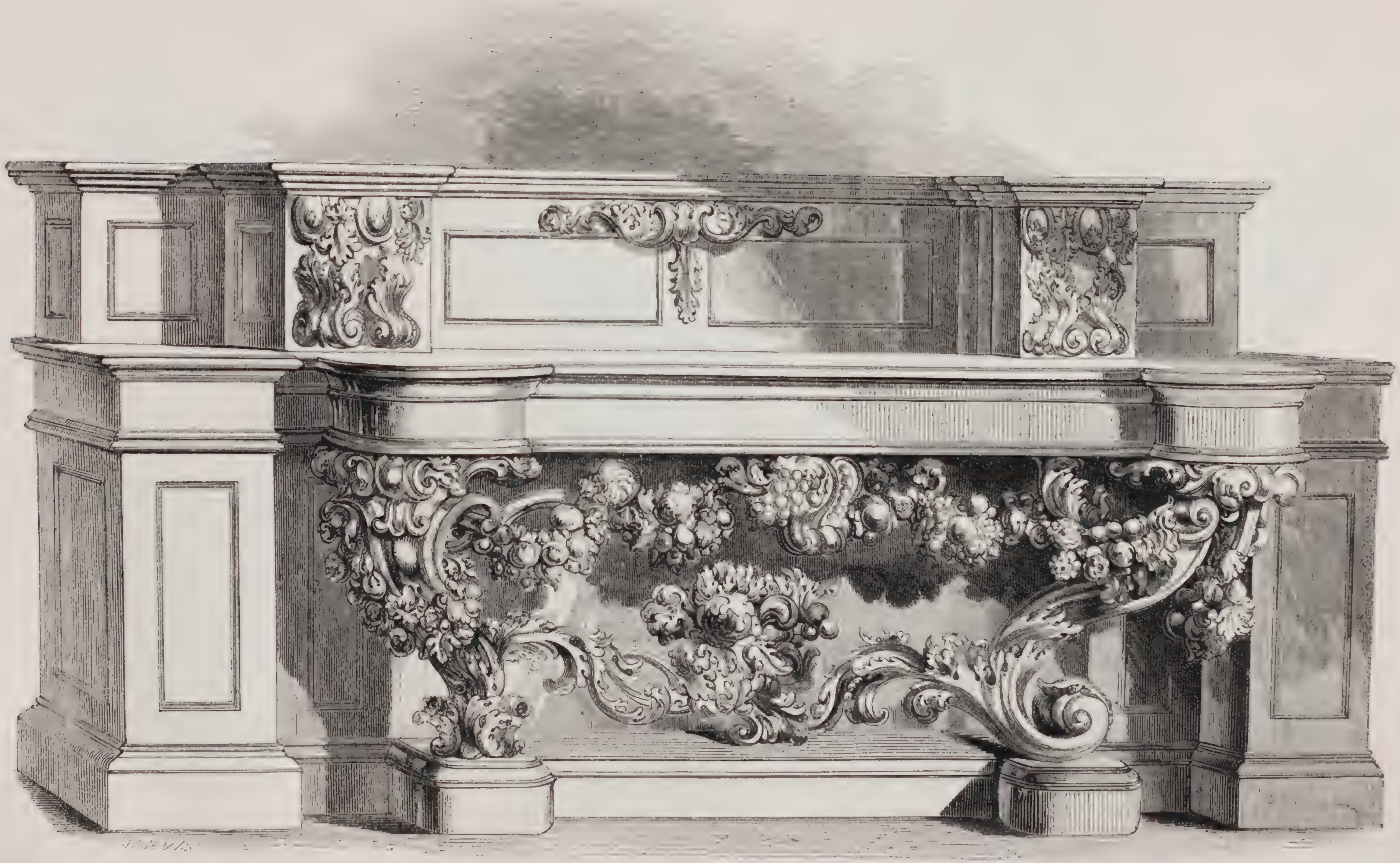
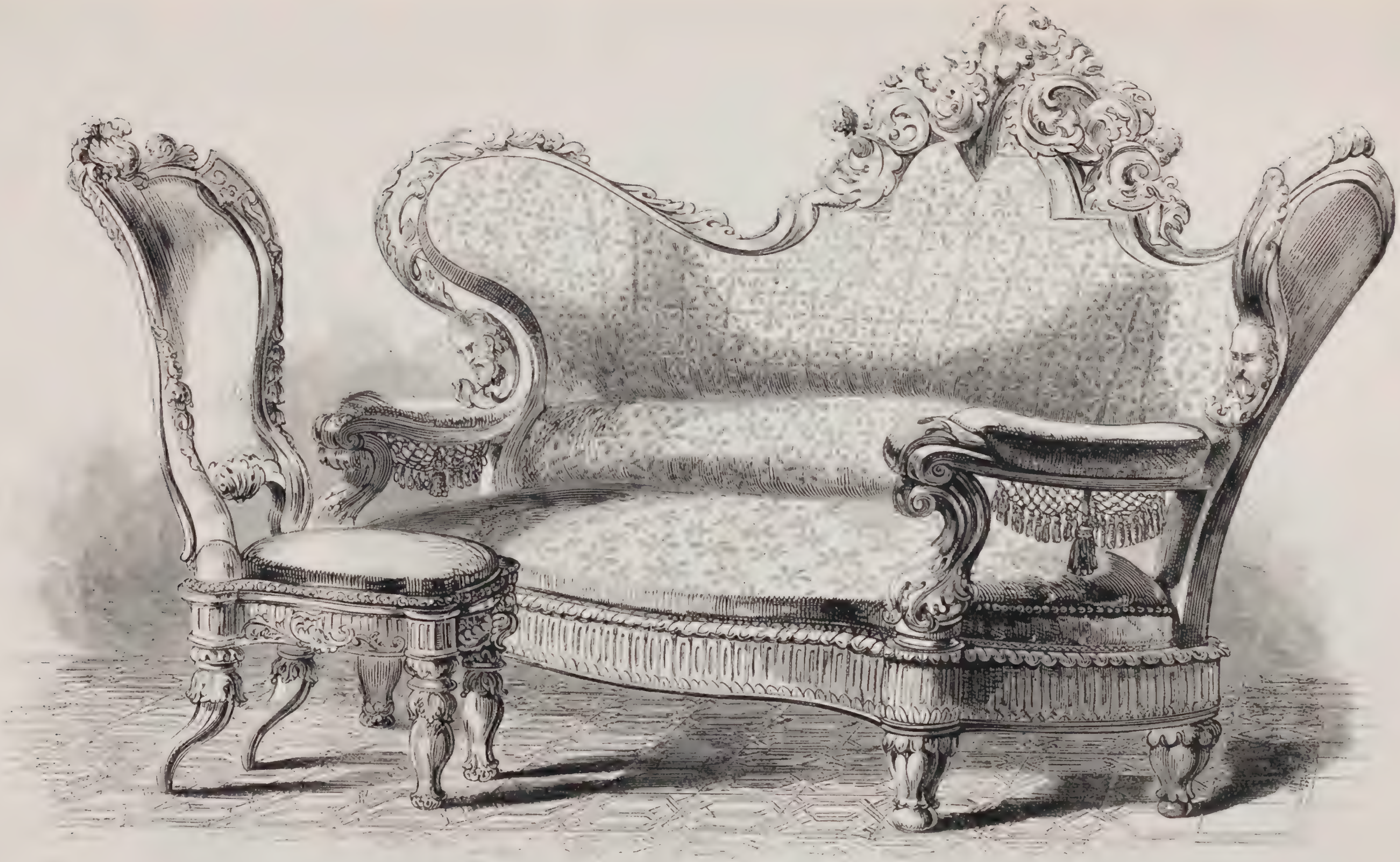


AUSTRIAN FURNITURE.

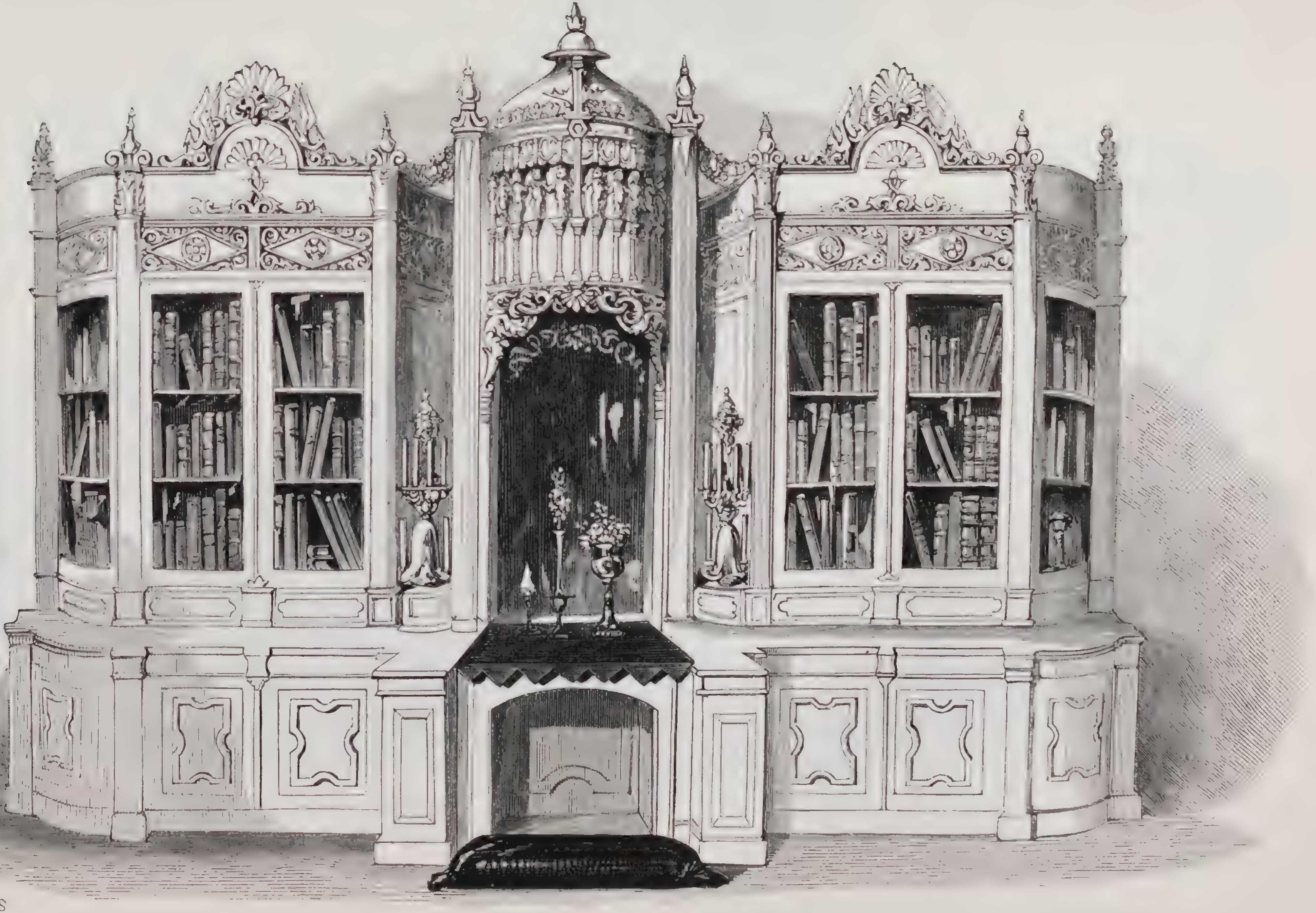


CARVED SIDEBOARD. AUSTRIAN FURNITURE.

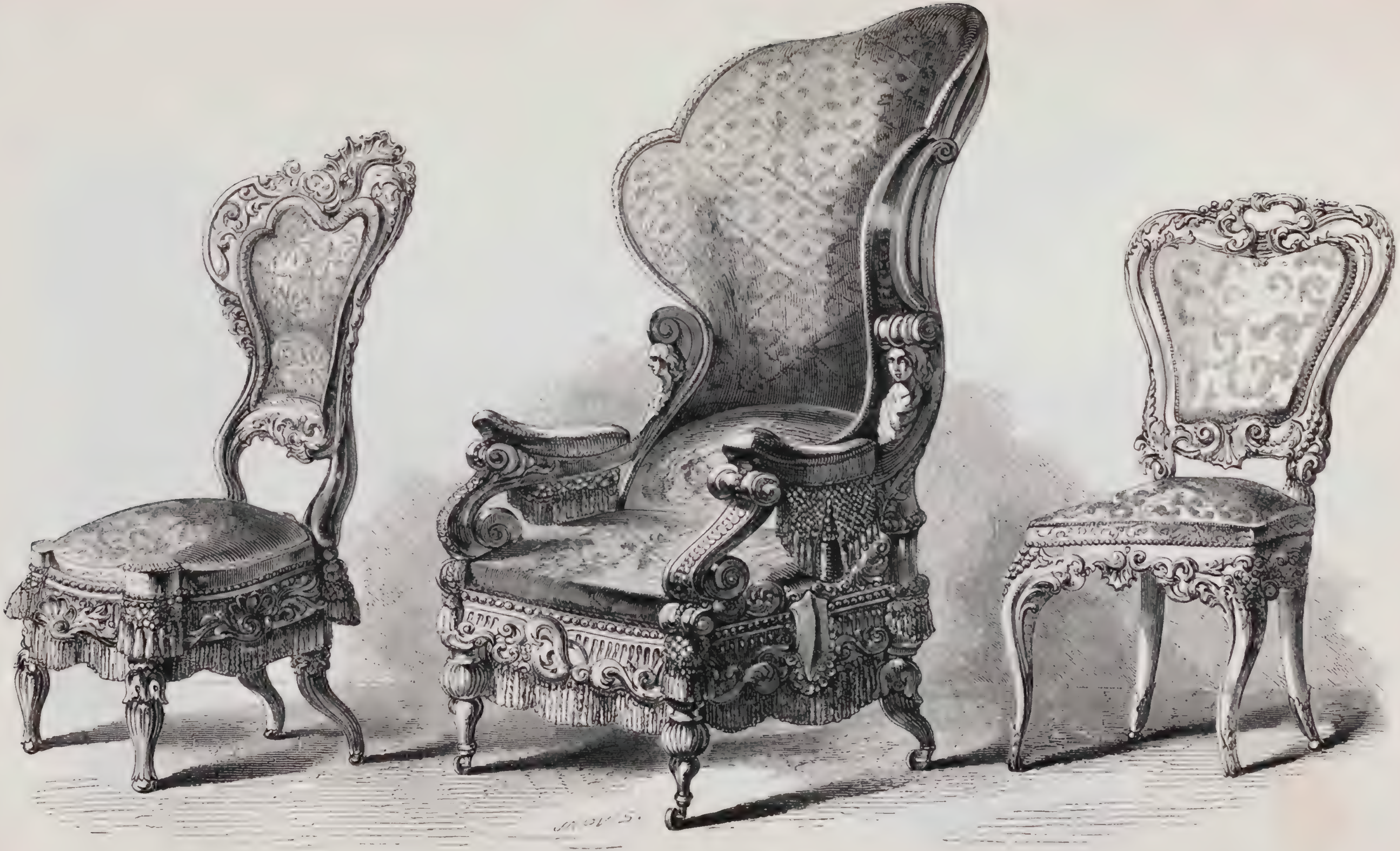


79.

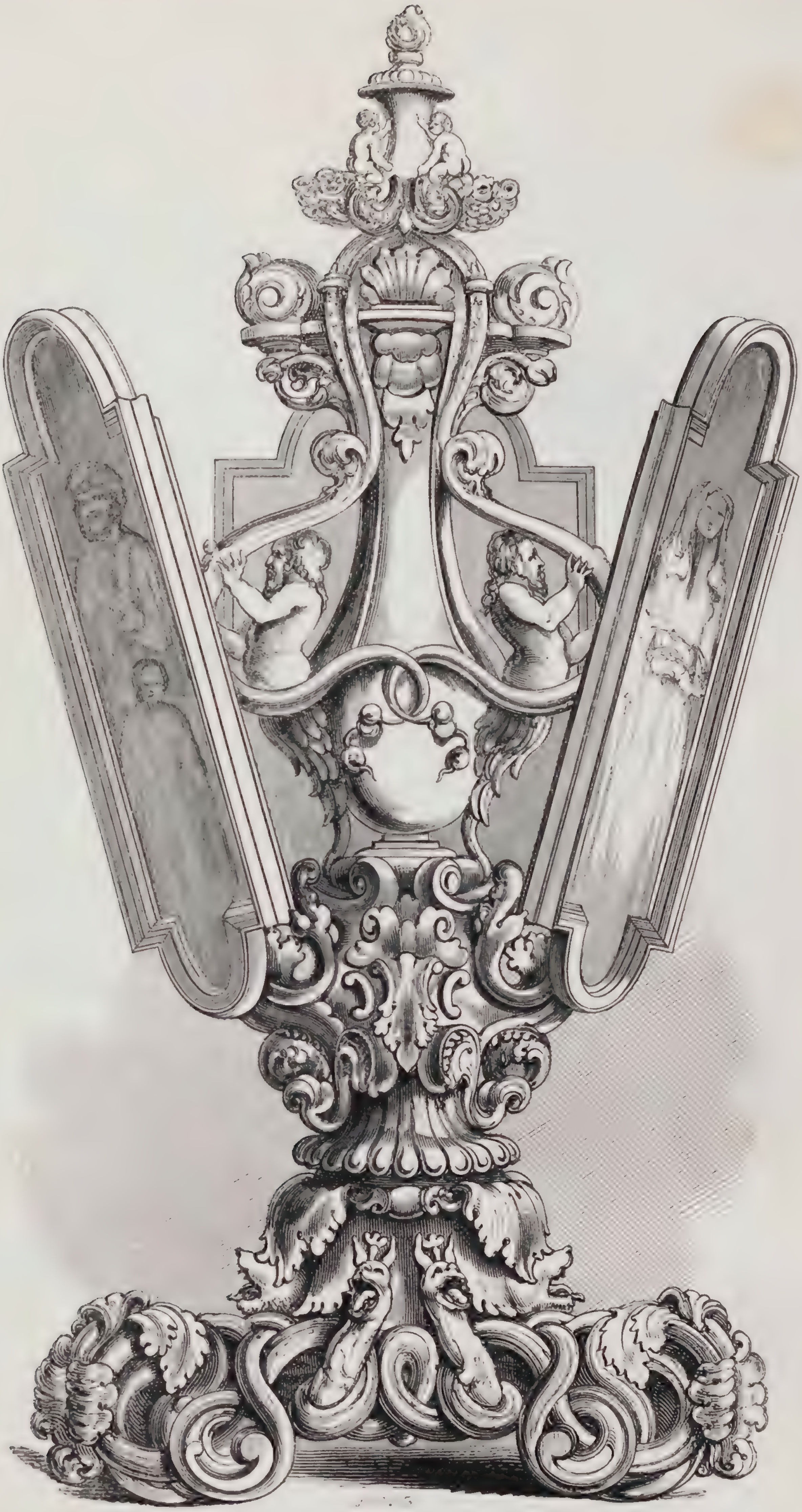
AUSTRIAN FURNITURE.



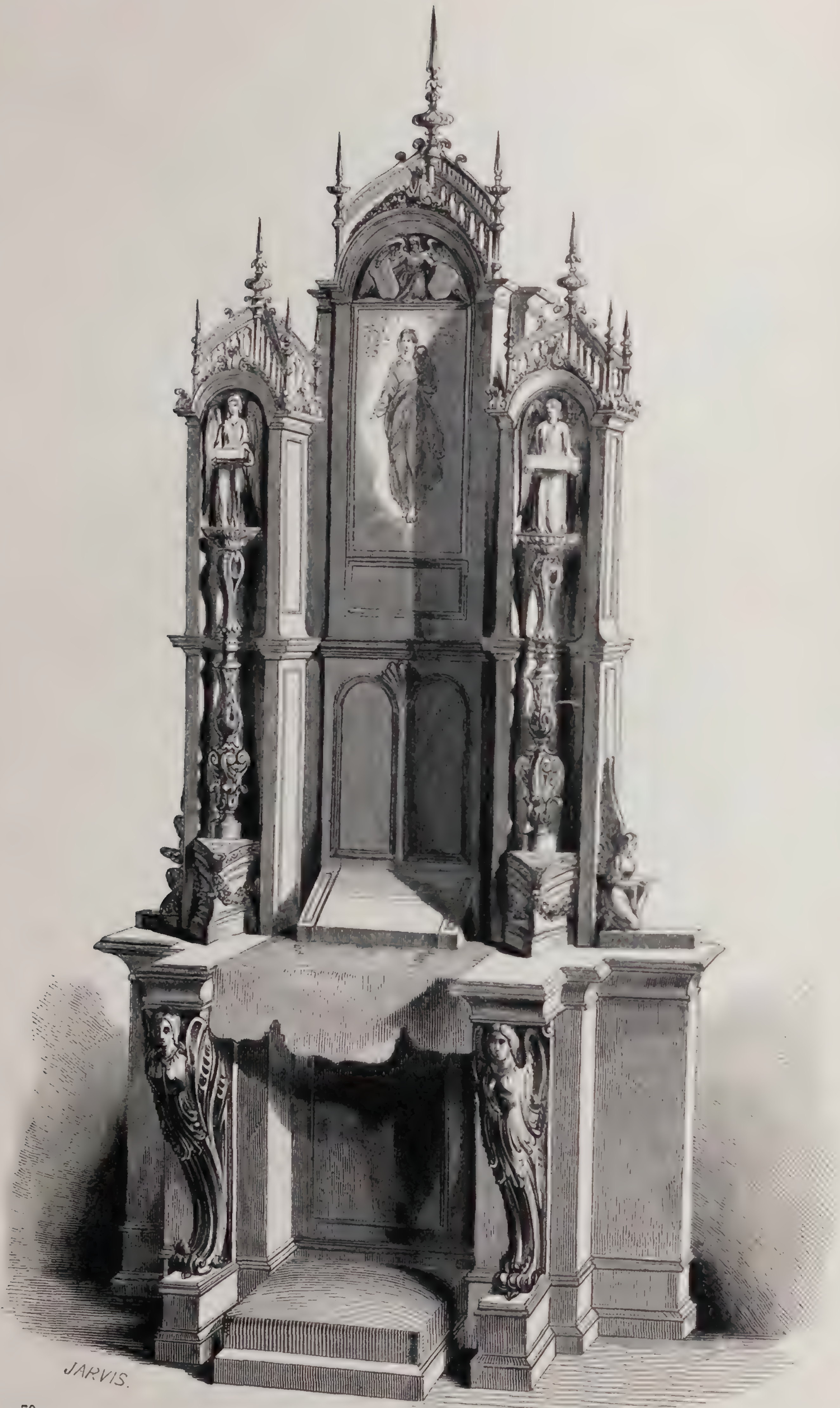
CARVED BOOK-CASE. AUSTRIAN FURNITURE.



AUSTRIAN FURNITURE.



54. PICTURE STAND. AUSTRIA.



AUSTRIAN FURNITURE.

Vase designed by B. de Bernardis.

648 **Melzer, Georg**, *Krems-on-the-Danube, Lower Austria*—Artist.
A wall-basket of various kinds of bark.

649 **Pauller, Joh. & Son**, *Vienna*—Gilders.
Picture-frames; sconces, gilt wood.

650 **Polt, Anton**, *Vienna*—Gilder.
Prie-Dieu altar in old Gothic style. The accompanying Plate 70 represents this object.

651 **Spoerlin & Zimmermann**, *Vienna*—Manufacturers.
Paper-hangings and borders. Models of friezes and cornices.
Illustrations of machinery and parts of machinery, for the use of schools.

652 **Haller's (Joh.,) Widow and Son-in-law**, *Vienna*—Manufacturers.
Toys of paper, wood, metal, &c.

653 **Kietaibl, Franz**, *Vienna.*
Mechanical and musical toys of wood, metal, paper, &c.

654 **Müller, C. A.** *Oberleutensdorf, Bohemia*—Manufacturer.
Toys of paper, wood, metal, &c.

655 **Purger, J. B.**, *Gröden, Tyrol*—Manufacturer.
Carvings in pine, lime, maple, &c., such as lay figures, from the smallest to the largest size. Figures and toys.

656 **Faller, Fritscheller, & Co.**, *Vallonara, near Bassano*—Manufacturer.
Straw hats and bonnets.

657 **Tandler, Stefan**, *Zinnwald, Töplitz, Bohemia.*
Specimens of straw plaiting and straw flowers.

658 **Kumpf, Ignaz**, *Schluckenau, Bohemia*—Manufacturer.
Wicker table-mats (spadrilles), hats, &c.

659 **Wunsche, Anton**, *Altehrenberg, near Rumburg, Bohemia*—Manufacturer.
Chip caps, table-mats (spadrilles), &c.

660 **Biondek, Michael**, *Baden, Vienna*—Producer.
Scented agriot cherry-tubes for tobacco-pipes, sticks, &c.

661 **Lang, Franz**, *Vienna*—Producer.
Odoriferous cherry-tubes for tobacco-pipes, sticks, &c.

662 **Partsch, A., jun**, *Theresienfeld, Lower Austria*—Manufacturer.
Odoriferous cherry-sticks for tobacco-pipe tubes.

663 **Trenner, Josef**, *Baden, Vienna*—Producer.
Agriot cherry-sticks.
Odoriferous cherry-sticks for pipe-tubes, sticks, &c.

664 **Alba, Samuel**, *Vienna*—Manufacturer.
Cigar mouth-pieces of wood, bone, meerschaum, and amber.
Meerschaum tobacco-pipe bowls.
Tobacco-pipe tubes and mouth-pieces.
Amber mouth-pieces.

665 **Arrer, Johann**, *Vienna*—Manufacturer.
Mother-of-pearl buttons.

666 **Astrath, Carl**, *Vienna*—Manufacturer.
Agriot cherry tubes and cigar mouth-pieces of meerschaum and amber, carved and mounted with gold and jewels.

667 **Beisiegel, Phillip**, *Vienna*—Manufacturer.
Fancy turnery: Agriot cherry tubes and sticks.
Tobacco-pipes and cigar-holders of meerschaum, amber, mother-of-pearl, and horn.
Tobacco-pipe bowls of meerschaum, silver mounted and carved.

[In the department of turnery and carving in wood, bone, pearl, meerschaum, amber, ivory, and tortoise-shell, Vienna occupies an eminent position. The carved tobacco-pipes, cigar mouth pieces, and similar articles for the use of smokers, may be said to be almost unrivalled for design, tastefulness, and cheapness. They are fully represented in the Exhibition, as likewise carved sticks, umbrellas, and parasols, which also form an extensive trade in Vienna.]

668 **Dreher, Adolf**, *Vienna*—Manufacturer.
Ivory figures and chess-men.
Tortoise-shell and horn snuff-boxes.
Rosewood and horn ink-stands.
Billiard balls.
Sets of salad-knives and forks of ivory, and turnery of mother-of-pearl, horn, ivory, tortoise-shell, and wood.
A crucifix, and various figures.

668a **Ketterl, E.**, *Vienna*—Turner.
Fancy articles in bone and ivory.

669 **Enstoller, Georg**, *Stadt Steyr*—Manufacturer.
Styrian tobacco-pipe bowls of wood.

670 **Flöge, Gerhard**, *Vienna*—Manufacturer.
Wood, amber, and meerschaum cigar mouth-pieces, and tobacco-pipe tubes.
Assortment of meerschaum tobacco-pipe bowls.
Chess-board of ivory, with figures.

671 **Friedrich, Joh.**, *Vienna*—Manufacturer.
Cigar mouth-pieces of meerschaum and amber, carved with letters, figures, &c.

672 **Grünhut, W. & Co.**, *Prague*—Manufacturer.
Meerschaum pipe; cigar mouth-pieces; cigar-pipes.

673 **Grünhut, J., jun.**, *Prague*—Manufacturer.
A meerschaum tobacco-pipe.
A cigar mouth-piece and a cigar-pipe.

674 **Grünhut, Anton, sen.**, *Prague, Bohemia*—Manufacturer.
Meerschaum pipes, and cigar mouth-pieces.

675 **Hartmann, Ludwig**, *Vienna*—Manufacturer.
Various kinds of walking-sticks, of wood, cane, &c. Stick-mountings.
Tobacco-pipe tubes. Cigar mouth-pieces of wood, amber, meerschaum, and horn. Pipe mouth-pieces. Tobacco-pipe bowls of meerschaum, Turkish clay pipes.
Assortment of cut cameos. Work-box of bone.
A tobacco-pipe of ivory. A cup of stag-horn.
A large piece of amber. Amber necklaces. Ivory buttons, &c.

676 **Infanger, Michael**, *Stadt Steyr, Upper Austria*—Manufacturer.
Styrian hunting tobacco-pipes, bowls of wood.

677 **Kraftl, Josef**, *Vienna*—Manufacturer.
Pocket ink-stands, of various kinds of wood. Penholders of bone and wood; umbrella handles and rings, and similar turnery.

678 **Litschke, Carl**, *Vienna*—Manufacturer.
Cigar mouth-pieces and pipes of meerschaum, amber, wood, horn, &c.
Tobacco-pipe tubes and mouth-pieces.

679 **Ludwig, Franz**, *Vienna*—Manufacturer.
Various kinds of walking-sticks, of wood and cane. Walking-stick pipes.

680 **Nagl, Leopold**, *Vienna*—Manufacturer.
Cigar mouth-pieces and pipes of meerschaum and amber.
Tobacco-pipe tubes and mouth-pieces.

681 **Pfeiffer, Leopold**, *Vienna*—Manufacturer.
Different kinds of pipe-tubes.

682 **Pfregner, Franz Anton**, *Vienna*—Manufacturer.
Cigar-holders of various kinds of wood, horn, bone, and cocoa-nut.

683 **Sievert, Eduard**, *Vienna*—Manufacturer.
Meerschaum and amber cigar mouth-pieces.

684 **Schwarz, Jacob**, *Vienna*—Manufacturer.
Medallions, penholders, needle-cases, thimbles, paper-knives, ink-stands, screens, watch-stands, and similar articles of mother-of-pearl.

685 **Tautz, Adalbert**, *Vienna*—Manufacturer.
An assortment of walking-sticks, of whalebone, cane, snake-wood, with carved and engraved handles of stag-horn, ivory, silver, &c.

686 **Wojtech, Joseph**, *Vienna*—Manufacturer.
Pipe-tubes of wood, of various kinds.

687 **Zeitler, Joseph**, *Vienna*—Manufacturer.
Tobacco-pipe and cigar-holders.
Bowls of meerschaum.
Cigar mouth-pieces of amber, cocoa-nut, &c.

688 **Petschacher, Alexander**, *Vienna*—Patentee and Manufacturer.
Hookahs and elastic tobacco-pipe tubes of various kinds, made by machinery.

689 **Begsteiger, Michael**, *Sierning, Stadt Steyr*—Manufacturer.
Rules, of various kinds.

690 **Buchberger, Franz**, *Stadt Steyr*—Manufacturer.
Rules, of various kinds.

691 **Tober, Joh.**, *Prague, Bohemia*—Manufacturer.
Rules, of various kinds.

692 **Tiffe, Adolf**, *Vienna*—Manufacturer.
Sticks for umbrellas and parasols, and mountings for the same.

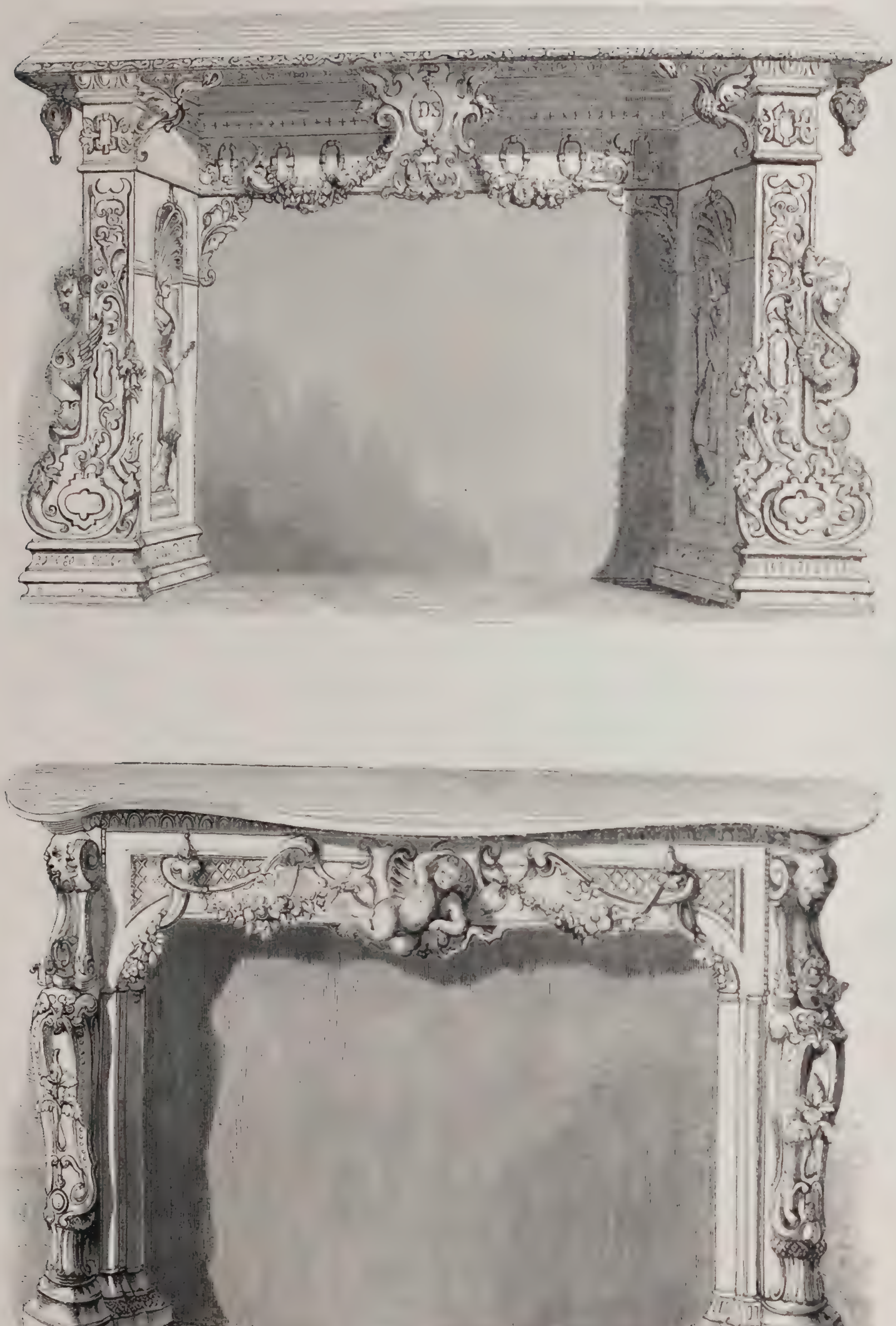
692a **Weiss, Joseph**, *Vienna*—Manufacturer.
Umbrella and parasol sticks and handles.

693 **Zandra, Joseph**, *Vienna*—Turner.
Sticks for umbrellas and parasols, and mountings for the same.

694 **Herdt, J. B.**, *Vienna*—Manufacturer.
Silk parasols.

695 **Rademacher, Christian**, *Vienna*—Manufacturer.
Silk parasols.

696 **Ritter, Norbert**, *Vienna*—Manufacturer.
Hair-powder, chignon combs and brushes of horn, tortoise-shell, and ivory; walking-sticks; ivory cases, &c.



SCULPTURED MARBLE MANTEL-PIECES. MESSRS. BOTTINELLI, AUSTRIA.

696a Hermannstadt Trade Union, *Transylvania.*
A variety of combs.

697 Kratschsmann, M., *Vienna*—Patentee and Manufacturer. (Agent, M. L. Kanitz & Sons, Vienna.)
Horn buttons for coats, waistcoats, trousers, &c.

698 Metzner, Wilhelm, *Vienna*—Manufacturer.
Coat, waistcoat, and shirt buttons, of mother-of-pearl and hoof-horn, in various forms and colours.

699 Bittner, F., *Neudorf, Bohemia*—Manufacturer.
Planes for joiners.
Wooden rods for making lucifer-matches.

700 Bürger, Josefa, *Vienna*—Manufacturer.
Artificial flowers, of various kinds.

701 Schlater, H., *Vienna*—Modeller.
Various kinds of wax figures and artificial flowers.

701a Oppenheimer, Caroline, *Vienna*—Manufacturer.
A lamp screen, cut by hand.

702 Serafino, Palatini & Co., *Venice*—Manufacturers.
Twenty-five specimens of assorted masks.

703 Gasser, Johann, *Vienna*—Sculptor.
"Venus bathing," in bronze. Four small figures, in bronze. Plaster statuette of a lady.
Model in bronze and zinc for a fountain.
Flower vase, cast in bronze and zinc.

704 Kähszmann, Joseph, *Vienna*—Sculptor.
Three statues, of Carrara marble, representing "A shepherd," "A flower-girl," and "Hebe with the eagle."

705 Max, Emanuel, *Prague*—Sculptor.
A group, in white Carrara marble, representing "Hagar and Ishmael."
A bas-relief, in Carrara marble—"An Amazon on horseback."

706 Cacciatore, Benedetto, *Milan*—Sculptor.
Bambino in a flower-basket, executed in Carrara marble.

707 Cocchi, Luigi, *Milan*—Sculptor.
Statue in marble—"The Virgin."

708 Croff, Giuseppe, *Milan*—Sculptor.
Statues in Carrara marble:—"Leda and the Swan." "Danäe awaiting the golden shower." A group, representing "Hermes and Salmace."

709 Emanueli, Giovanni, *Milan*—Sculptor.
Statue in Carrara marble—"A boy with a bird's nest."

710 Fraccaroli, Innocenzo, *Milan*—Sculptor.
Two statues in Carrara marble:—"The wounded Achilles," and "David slinging the stone."
A group in marble—"Atala and Chactas."

711 Galli, Antonio, *Milan*—Sculptor.
Three statues in Carrara marble:—"Susanna at the bath;" "Jephtha's daughter;" and "A youth on the seashore."

712 Gandolfi, Democrito, *Milan*—Sculptor.
Group in Carrara marble, "The Emigrant" (a veiled widow begging for her children), an episode from the history of France in 1793.
Statuette in Carrara marble, "Trust in God."
Statue in marble, for a tomb, "Grief."
Statue in plaster, "Italy."
"Dancing girl," in marble, copy of Canova.
Mantelpiece, with mirror frame, in Carrara marble, in the style of the 17th century, with figures of Cupid and Psyche, &c.
Model of a fountain, in the Asiatic style, to be placed in a room, with a group of three statues. This can be converted in winter into a fire-place.
A triptich, modelled in ivory paste.
Eight medallions, in ivory paste, representing ideal heads, and august and illustrious historical personages.
Thirteen models in wax, plaster, and terra cotta, representing—the Evangelists; the Bride of Solomon's Song; St. Cecilia; Rebecca at the Fountain; Rachel at the Well; Hero awaiting Leander (this would serve to light the room in which it is placed, by introducing a jet of gas into the torch held in the hand); Esmeralda; Modesty; Helen urging Paris to attack the enemies of Troy.

713 Strazza, Giovanni, *Milan*—Sculptor.
Statue in marble, "Ishmael in the desert." (Property of P. Gonzales, Milan.)

714 Magni, Pietro, *Milan*—Sculptor.
Group in Carrara marble, "Learning to walk: the first step."

715 Manfredini, Gaetano, *Milan*—Sculptor.
Statue in Carrara marble, "Narcissus at the fountain."

716 Marchesi, Luigi, *Milan*—Sculptor.
Statue in Carrara marble, "Eurydice bitten by the snake."

717 Micotti, Ignazio, *Milan*—Sculptor.
A statue in Carrara marble, child with dog, "Candour."

718 Motelli, Metello, *Milan*—Sculptor.
Group in Carrara marble, "Cupid's vintage."

719 Dal Negro, Pietro, *Milan*—Sculptor.
Statue in marble, "Innocence," represented by a boy bitten by a viper.

720 Pierotti, Giuseppe, *Milan*—Sculptor.
Group in plaster, "Mazeppa being bound to the wild horse."
"An Arabian horse attacked by a serpent," in Carrara marble.

721 Puttinati, Alessandro, *Milan*—Sculptor.
Statue in Carrara marble, "Prayer."

722 Sangiorgio, Abbondio, *Milan*—Sculptor.
Statues in Carrara marble, 1. "A soul ascending to Heaven." (Property of J. R. Jaffray, Esq.)
Two heads in Carrara marble:—
2. "Head of the Redeemer."
3. "The poet Monti."

723 Somajni, Francesco, *Milan*—Sculptor.
Group in Carrara marble representing "Pan and Syrinx."

724 Gottl, Bernard, *Carlsbad, Bohemia.*
Two colossal vases of Carlsbad thermal tufa, executed by Knoll Brothers, of Carlsbad, each 2 ft. 9 in. high, and 1 ft. 7 in. diameter.

725 Benzoni, Gaetano, *Milan*—Sculptor.
A mantelpiece in marble with eight figures of boys.

726 Bottinelli, Giuseppe (late), *Milan*—Sculptor.
Three marble mantelpieces, ornamented (one the property of D. Sopransi, of Milan). Mirror frame.
Model in plaster of a mantelpiece.
These mantelpieces are represented in the accompanying Plate.

728 MOTELLI, GAETANO, *Milan*—Sculptor.

A mantelpiece in Carrara marble in the Anacreontic style.

A group in Carrara marble, "Paolo and Francesca di Rimini."

Nest of Cupids. (Property of Joseph Paxton, Esq.)

729 SZENTPETERY, JOSEPH, *Pesth, Hungary.* (Agents, R. & J. Garrard & Co., Gold and Silversmiths and Jewellers, 31 Panton Street, and 25 Haymarket.)

A copper-embossed tableau (in the possession of Henry Kirk, Esq., 15 St. James's Square). This unique work of art represents the battle of Arbela (about 330 years before Christ), in which Darius, King of Persia, is defeated by Alexander. It contains hundreds of figures in a relief of 3 inches, produced from a single sheet of copper, about an eighth of an inch thick, hammered and punched up with punches of various forms and sizes; the sheet of copper being passed through the fire hundreds of times to soften it and make it malleable. The artist, who is self-taught, was occupied on this extraordinary work five years, and is now 70 years of age.

Tableau representing the Indian King Porus taken prisoner by Alexander the Great; with 217 figures embossed by hand on a plate of silver weighing 18 marks 3 ounces.

729A FRIEDRICH, J., *Prague, Bohemia*—Artist.

Statuette of fine silver: Rudolph of Hapsburg.

730 PETROVITS, D., *Vienna*—Inventor and Sculptor.

Thirty-three medallions cast in a metallic composition by a newly-discovered method.

731 CESARI, DESIDERIO, *Milan*—Sculptor.

Three portraits of G. D. Romagnosi, A. Rolla, and Bertini, chiselled and embossed in sheet copper, in the style of Benvenuto Cellini.

732 FRENER, GIOVANNI B., *Milan*—Engraver.

Medal in bronze of Joseph Verdi.

733 ZAPPARELLI, GAETANO, *Brescia*—Engraver.

Medals, dies, and rings, with sample-book.

734 BORRINI, LUIGI, *Milan*—Painter.

A lay figure (artist's model).

735 DINKLER, CARL, *Vienna*—Engraver.

Metal stamps, to be used with any coloured ink.

736 GEYLING, CARL, *Vienna*—Painter on Glass.

Paintings on glass, representing a church; a winter landscape in Upper Austria; view of Johannisberg, on the Rhine; view of the town-gate of Kremnitz, in Hungary.

737 BERTINI, GIUSEPPE, *Milan*—Painter.

Great painted window, representing "Dante and some of his ideas." This window is represented in the accompanying Plate.

Oval painting on glass: the Holy Family.

738 MONTANARI, ALESSANDRO, *Milan*—Decorator.

Vaulted ceiling of a library, with portrait of Milton, and scene from Paradise Lost, as centre.

739 VOGEL, CARL FRIEDRICH, *Milan.*

Photographs.

740 PUCHER, JOHANN, *Veldes, Upper Carniola*—Inventor.

Photographs on glass, by a new method.

741 BONGIOVANNI, BARTHOLOMÄUS, *Vienna*—Sculptor.

Design for a candelabrum, executed with crowquill, in gold frame.

742 HARTMANN, LOUIS, *Prague*—Pattern Designer.

Various designs for merino furniture, prints, &c.

746 MONTI, RAFFAELLE, *Milan*, and 45 *Great Marlborough Street, London*—Designer and Sculptor.

Statues in Carrara marble—

Eve after the Fall.

A Veiled Vestal. (Property of His Grace the Duke of Devonshire.) The annexed Plate represents this statue.

Statuettes, Ancient and Modern Love. (Property of B. Cohen, Esq.)

Group of children, representing Innocence.

Statue, a Circassian Slave in the market.

Group, Angelica and Medora.

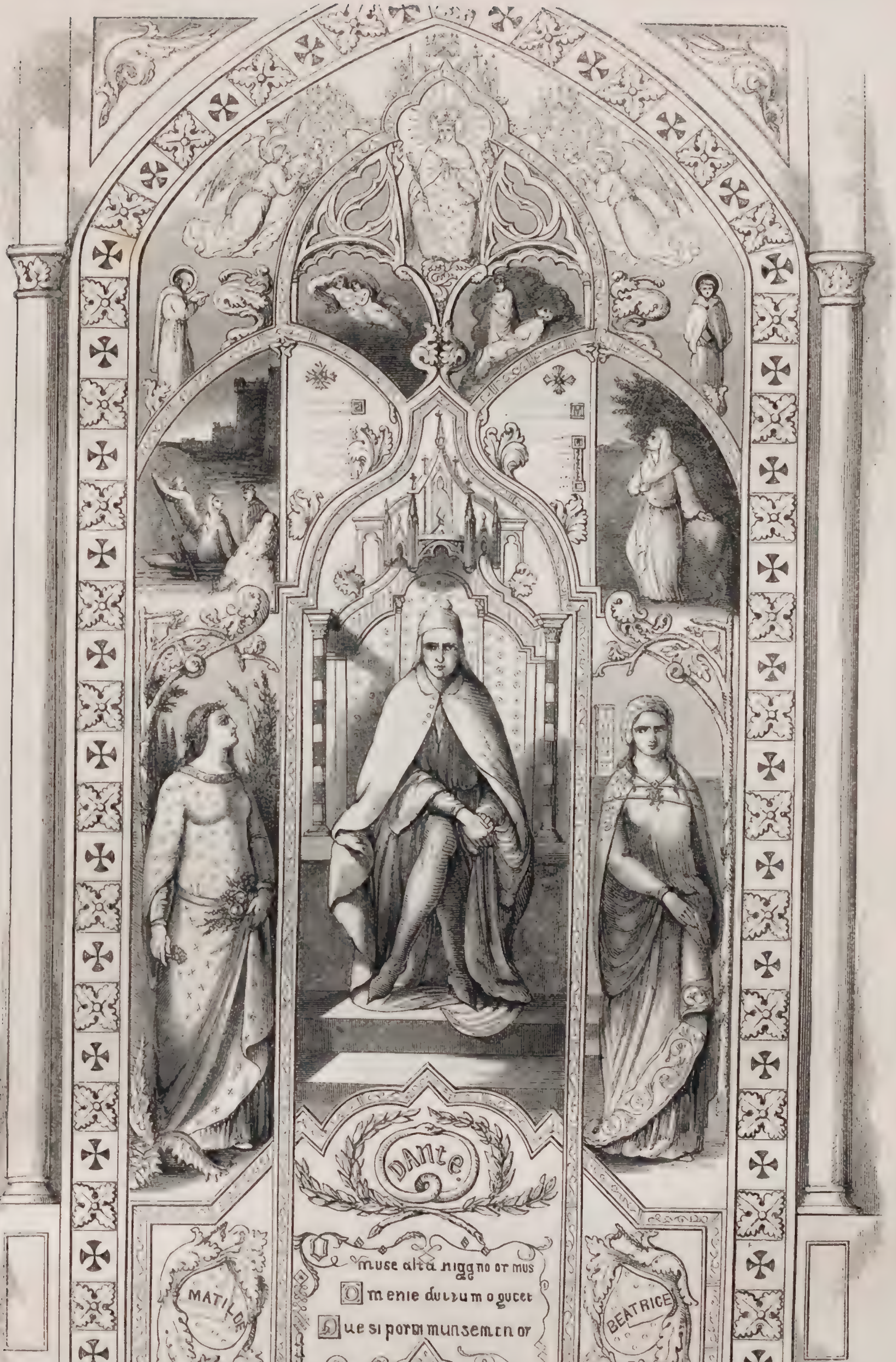
Group of two Girls fishing. (Property of an English gentleman.)

Statuette of a Boy catching a Grasshopper. (Property of Thos. Baring, Esq., M.P.)

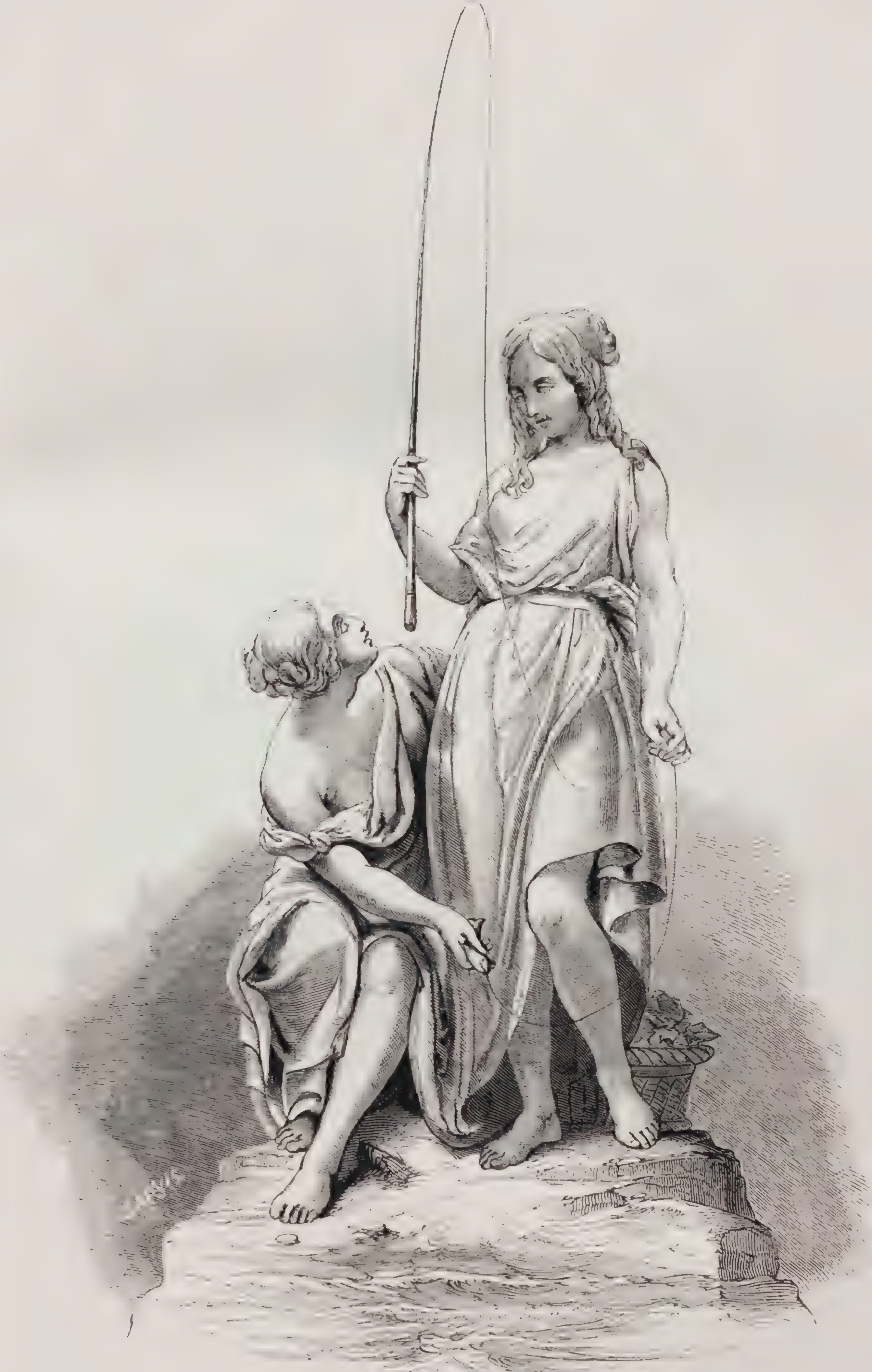
747 THOMSON, Miss, 35 *Euston Square, London*—Proprietor.

Carpet worked by the late Empress Marie Louise, assisted by the late Queen of Wurtemburg, and other distinguished ladies. It was commenced in 1811, and was intended as a present to the Emperor Napoleon. After his death it was in hand for eight years, having been finished by other noble ladies.

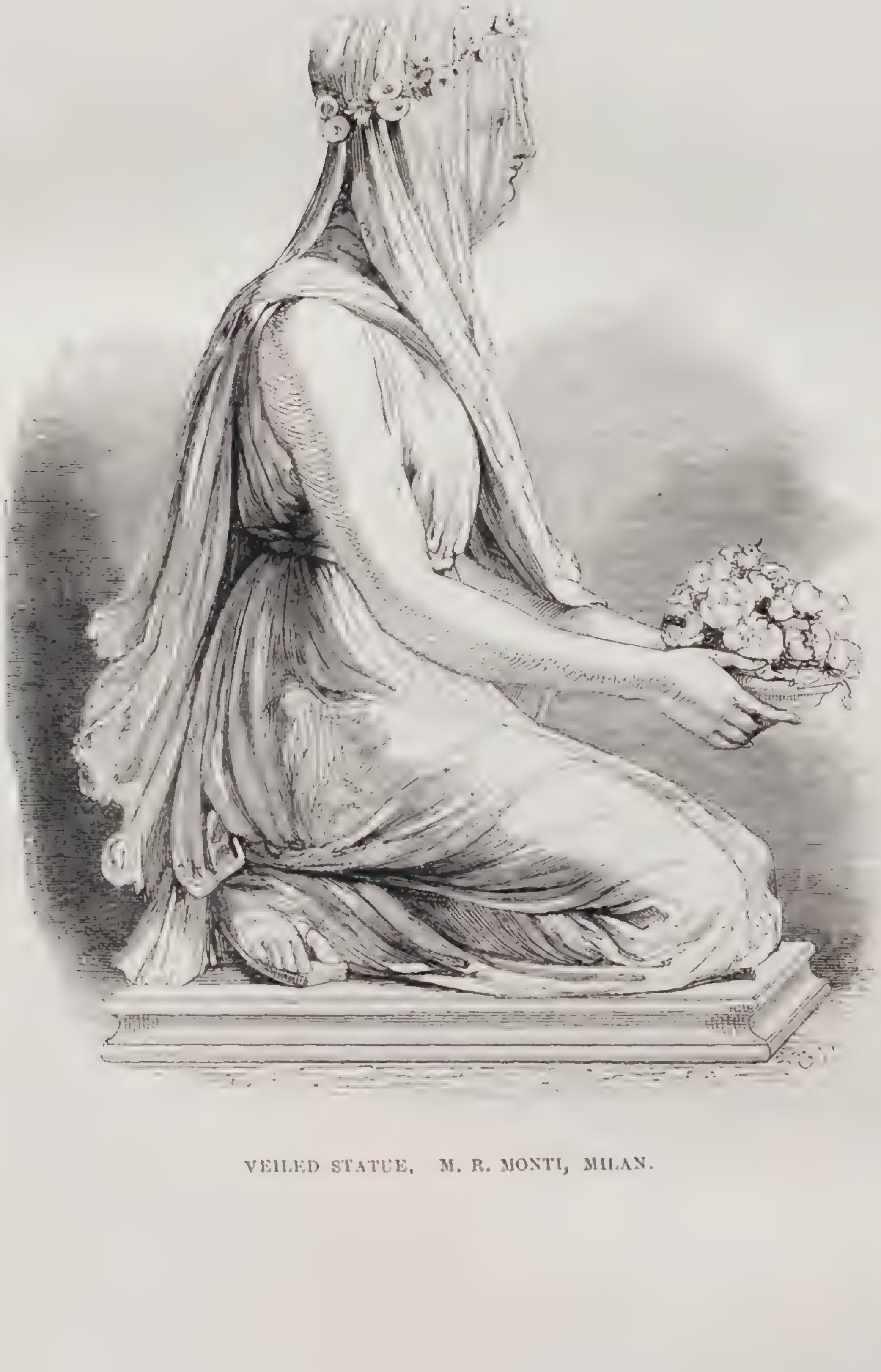
748 FARINA, JOHN MARIA, *Cologne, on the Rhine, opposite the New Market*, and (*London*) 52 *Mark Lane.* (*In the Furniture Room.*)—Fountain which plays eau-de-Cologne.


DANTE
O muse alta niggno or mus
O menie dussum o gucet
Que si porm munsem m or
MATILDA
BEATRICE

102. PAINTED WINDOW. BY M. G. BERTINI OF MILAN.



GROUP IN MARBLE. M. R. MONTI. MILAN.



247. VEILED STATUE, M. R. MONTI, MILAN.

STATES OF THE GERMAN ZOLLVEREIN.

1. Prussia, Baden, and some other States of Northern Germany.
    - *a*. Prussia.
    - *b*. Prussia—Baden—Electoral Hesse.
    - *c*. Prussia.
    - *d*. Prussia—Electoral Hesse—Lippe.
    - *e*. Prussia—Saxon Grand Duchy and Duchies—Brunswick—Anhalt and Thuringian Principalities.
2. Bavaria.
3. Saxony.
4. Würtemburg.
5. Frankfort-on-the-Maine.
6. Grand Duchy of Hesse.
7. Luxembourg.
8. Nassau.

* * *

Dr. von Viebahn, Berlin, President.

Prof. Dr. Schubarth, Berlin, Commissioner for *Prussia*.
Prof. Dr. von Hermann, München, Commissioner for *Bavaria*.
Prof. Dr. Hülsse, Dresden, Commissioner for the Kingdom of *Saxony*.
Dr. Steinbeis, Stuttgard, Commissioner for *Würtemburg*.
Prof. Dr. Rau, Heidelberg, Commissioner for *Baden*.
Mr. Schreiber, Bieber, Commissioner for *Electoral Hesse*.
Mr. Roessler, Darmstadt, Commissioner for the *Grand Duchy of Hesse*.
Prof. Dr. Gustav Schueler, Jena, Commissioner for the *Grand Duchy of Saxony* and the other *Thuringian States*.
Prof. Dr. Varrentrapp, Brunswick, Commissioner for the *Duchy of Brunswick*.
Mr. Odernheimer, Wiesbaden, Commissioner for the *Duchy of Nassau*.
Mr. Philipp Ellisen, Frankfort-on-the-Maine, Commissioner for *Frankfort*.

* * *

North and South Side, C. D. E. 62, 23; F. 63 to 67; 75, 76; G. 62 to 64, and 67; H. I. J. 62 to 64; K. 61 to 67; L. 63 to 66; M. 63 to 67; N. O. P. 63 to 69; Q. R. S. 62 to 69.

North East Central Gallery, G. H. 67; I. 62 to 67; 74 to 76.

South East Central Gallery, M. 62 to 67; N. O. 67.

STATES OF THE GERMAN ZOLLVEREIN.

INTRODUCTION.

GERMANY may be divided into three commercial groups, of which the most extensive, generally designated "The Zollverein," or "Great Custom Union," was constituted in the year 1828 on the invitation of Prussia. It consists of twenty-six Germanic States, which form the centre of the vast Germanic region. The Zollverein embraces two-thirds of the entire Germanic territory, occupied by twenty-nine millions of inhabitants.

The limits of the Zollverein are—on the south, the Germanic provinces of Austria and Switzerland; on the north, the kingdom of Hanover, the two Grand Duchies of Mecklenburg, the Duchy of Limburg, and the Netherlands. To arrive at an adequate notion of the extent and value of the general industry of Germany, it is necessary not to omit out of our consideration the Northern Powers which hitherto have taken no part in the Custom Union.

In the Official Catalogue of the Great Exhibition we find that the number of exhibitors from these States, including Hamburgh, Hanover, Lübeck, Mecklenburg, and Oldenburg, is not less than 1,520, however many more German contributions have been received. These data show that even after deducting from this aggregate the number of Austrian exhibitors, Germany will remain nearly equal to France as to the numerical strength of her list of exhibitors.

The industry of Germany is, generally, in a satisfactory state of progress; and if the conditions and the difficulties under which that great country has laboured during the last historic period referred to be duly considered, the inquirer must be at once astonished and profoundly impressed by the consideration that even under those manifold impediments to trade which within that interval have prevailed in some provinces of the Germanic territory, the genius of art and industry has shed its fertilizing and creative influences over the entire land, enabling the German nation at large to enter the field of honourable competition opened in London to the industry of all nations, with other states which have for centuries past enjoyed the blessings of civil freedom and domestic unity.

In Germany the differences of laws, of coins, of weights and measures, subsisting between her territorial divisions, have always proved a material hindrance to the advancement of industry and commerce. The Zollverein (embracing, as has been already stated, two-thirds of the most industrious provinces of Germany) has already done much towards securing a fair development to that commerce and industry, and giving to both of them that sort of liberty and support which they enjoy in England and in France.

If we consider the statistics of the productions of agriculture, both in respect of those raised from the soil and those procured from the forest, of the results of industry and of those of art, we shall find that the value of these exports from the states forming the Zollverein, exceeds that of the imports into the same States from other countries by about 80,000,000 of thalers, or about 12,000,000*l.* sterling annually. The important share of the total yearly exports of Germany, which is contributed by the Zollverein, either goes definitively to Great Britain or to the Colonies and other possessions acknowledging the dominion of the British Crown, or is *transported by the* medium of British commerce and navigation to other foreign countries. The commercial reputation of such productions is already established by the increasing sales which they command.

The Zollverein commands neither the mechanical power nor the technical means that Great Britain possesses in so eminent a degree. But in all that regards the cultivation of talent and activity, taste, and that appreciation of the beautiful and the noble in every condition of society, which have always been a great natural endowment of German genius, the Zollverein may claim to rank with any other country of Europe, especially in those products which are of a class requiring the combination of utility, taste, and cheapness.

To a prosperous condition of industry one condition of mental character is essentially requisite, and this is possessed by the German in an eminent degree. It is the consciousness that never and in no effort of human art or science is the ultimate stage of perfection to be reached; and that it is only by an impartial appreciation of foreign productions, and adopting to a reasonable extent such improvements as we can borrow from them, that we can guard against an overweening opinion of ourselves operating to the ruin of our own industry.

If we look at the productions (Raw Materials) in Group A. of this collection, we shall find in the first Class products of those branches of the national industry which have always been followed in Germany with scientific ability, circumspection, and practical energy—namely, the arts of mining and metallurgy in general. In these arts, from a remote period, the Germans were the tutors to all other nations. The technology of these arts, still retained and used in all European languages at this day, is, in itself, evidence which confirms this assertion.

The mines of Prussia and Nassau have furnished such specimens as may suffice to convey some representation of the general condition of mining industry in those countries, and to secure to Germany an honourable rank in this department. A newly-discovered process for eliminating gold out of arseniated gravels (which latter, hitherto, considered as without any value) has been within a very recent period imitated even in Mexico. The productions of the Zollverein States in steel have not been surpassed by those of any other countries. Their yield of raw and their fabrication of forged iron, although not sufficiently extensive to vie with the monster iron works of England, are yet rapidly increasing. A beautiful collection of raw materials in these metals, deposited in this section of the Exhibition, especially merits the close attention of observant visitors.

PRUSSIA

An extensive and highly-important collection of objects is exhibited by Prussia and the conjoined States. They represent the various classes very fully, and give a forcible idea of the manufacturing resources of these States, and of the natural advantages derivable from the soil itself. The specimens of raw material and produce in particular are extremely interesting; and among them, the production of iron in a raw and preliminary stage of manufacture holds a prominent place. The production of zinc, also, forms an important feature in the metallurgical operations of these States, large quantities being annually exported to all parts of the world. Chemical preparations of interest are also exhibited. The specimens of wool represent the vast importance of the production of this raw material to the manufacturers of the Zollverein generally, and of Saxony in particular. Great interest also attaches to the beautiful specimens of amber in its natural and manufactured state. Some of these specimens are of a size rarely met with. The collection of this singular fossil resin forms an interesting feature in the local history of certain districts on the Samlandic coast. The amber-fishery was, at a former period, of no small importance to the King of Prussia. Among the machines exhibited are several of interest. In this number must be considered the large and costly apparatus for the evaporation of syrup, made of beaten copper. This apparatus is of the most recent construction, and exhibits features of skilful mechanical arrangement. A type-founding machine, agricultural implements, &c., are also shown. The philosophical instruments comprise several of a complicated character. An electro-magnetic self-registering anemometer, and the electro-telegraphic arrangements adopted on all the Prussian Government lines, are among these. The great celebrity, also, of the manufacturers of balances of Berlin and other places in this Union is maintained by the exhibition of several of these delicate and valuable instruments. The textile manufactures are illustrated by the specimens sent from a considerable number of manufacturers, both in cotton, wool, flax, and silk. The beautiful ornamental glass, and specimens of fine casting in iron, will also receive notice. From the porcelain works of Berlin have been forwarded some fine objects in illustration of the ceramic art. The objects included under the Fine Arts are such as will not be soon forgotten: among these is the statue of the Amazon, and several others in its immediate vicinity, of great beauty, and indicate elaborate care in the finish.—R. E.

1.—PRUSSIA, BADEN, AND OTHER STATES OF NORTHERN GERMANY.

Chief Commisssioner in London, Dr. von Viebahn, 43 *Albion Street, Hyde Park.*

Agents in London, Messrs. Stein and Hall, 70 *Newgate Street, City.*

1 The Administration of the Royal Prussian Smelting Works and Iron Foundery, *Gleiwitz*—Producer.

Samples of wrought-iron, as used for rollers, cast from iron which has been refined in a furnace by the use of gas; sheet-iron rollers; bar-iron rollers.

2 The Royal Prussian Iron Works, *Malapane, near Opeln.*

Pair of hard cast-iron cylinders.

Several samples of materials and products prepared by a fire of wood-coal in the Royal Ironworks at Malapane.

Specimens of brown iron ore; clay-iron ore; limestone; sea-coal; coke; pig iron, foamy grey; ditto, grey metal; ditto from clay-iron ore not calcining; slags from melting of the clay-iron ore not calcining.

Several coloured slags from the regular working of the high furnace.

Fine iron of the finery by gas; mottled fine iron for the cast of rollers; light grey ditto, of the finery by gas (for such parts of machines as move at a high velocity).

Slags from refining the iron by gas.

Fragment of a rail.

Flat, square, and round irons, of different sizes.

[The process of refining iron by gas consists in driving carbonic oxide through the melted mass, by which the carbon is more effectually removed.—R. H.]

Red calamine from the mines at Scharley, near Beuthm, in High Silesia; white ditto ditto; red ditto from the Maria, Calamine Works, near Beuthm; white ditto ditto.

Zinc in drops; white zinc (oxide of zinc); cadmium (metal).

[These calamine earths are carbonates of oxide of zinc combined with varying quantities of oxide of iron and aluminous earths. Some of these ores contain cadmium. The territory of the Zollverein is the principal producer of zinc. Silesia possesses the most extensive zinc works in the world; and their produce finds a conspicuous place in the Great Exhibition, more especially as the quality of the ore, as well as its rolling and its purification, differ from those of the zinc of any other region. It is also to be observed that the manufacturing of rolled, cast, and other descriptions and productions of zinc, are quite peculiar as practised in the Zollverein, and their export is of the highest importance to that Union. In illustration of this point, it may be stated that the East India market is supplied almost exclusively with zinc from Silesia, whereas, in former times, Chinese zinc was imported into the East Indies, and from thence into Europe.]

3 Royal Works at Konighuette—Producers.

A collection of the most important materials used at the works in the manufacture of iron and zinc, as well as the products and half-products taken from the same, viz.: brown iron-ore, ochry-brown iron-stone, limestone, coal, coke, &c.; pig-iron, No 1, pig-iron, No. 2, grey, and pig-iron from red iron-stone; blast-furnace slags from the red iron-stone, various blast-furnace slags; white, mottled, and grey pig-iron.

4 Elsner, von Gronow, & Co., *Tarnowitz, Silesia,* —Producers.

Specimen of Roman cement. The present sample was found at a depth of 160 feet in a lead mine (Frederik's mine) near Tarnowitz in Prussian Silesia. It consists of an argillaceous carbonate of lime and magnesia.

Floor-stone of Roman cement for paving.

[Roman cement, commonly so called, is obtained by the calcination of argillaceous carbonate of lime; but when, as in the present case, the cement stone contains magnesia, the result is a double silicate of lime and magnesia, which may probably be of very great solidity, and admirably adapted for pavement.—D. T. A.]

5 Manufactory for Patent White Lead, *Stettin* —Manufacturers. (Agent in London, Mr. Charles Kekulé, 60 Mark Lane.)

Samples of patent white lead.

6 Goettler, Wilhelm, *Reichenstein in Silesia*—Producer.

Specimens of arsenic, gold, washed and unwashed ore, ores, showing a process by which, out of the residue of the arsenic ores, the gold therein contained is chemically drawn out by moisture.

The process is grounded upon the trials of Mr. Plattner, Professor of Chemistry, at Freiburg, in Saxony.

Arsenic metal, glass, caput mortuum, &c. A piece of pure gold.

7 Du Bois, C. A., *Hirschberg, Silesia*—Producer.

Samples of cinnabar, as prepared by the exhibitor for painting and the manufacture of sealing-wax; bisulphuret of mercury.

8 Lucas, Moritz, *Kunersdorf, near Hirschberg*—Producer.

Samples of cinnabar (Hg. S_2). Exhibited for purity and high quality of shades.

9 Milch, A., *Warmbrunn and Cologne*—Producer. (Agent in London, Mr. Green, 17 Gough Square, Fleet Street.)

Samples of bricks, with drawing and description of a brick-press of a peculiar construction.

10 Rimann, Ernst, *Hirschberg, Silesia.*

A small case of polished and unpolished precious stones found in the neighbourhood of Hirschberg.

11 Ruffer & Co., *Breslau*—Manufacturer.

An assortment of zinc-plates, of various thicknesses and sizes, including two as thin as a sheet of paper.

Ten zinc plates for tiles, fourteen by twenty-eight inches.

12 Cochius, E. E., *Oranienburg, near Berlin*—Manufacturer or Producer.

Large specimen of crystallization of prussiate of potash.

[This salt is remarkable for the beauty of its crystals, and not less for the brilliant colours of many of its compounds.—R. E.]

13 Kunheim, Louis Albert Hugo, *Berlin*—Producer.

A complication of crystals of sugar of lead.
Blue vitriol. Acetate of soda.
Sulphate of magnesia. Pink-salt.
Acetate of lime. Sulphate of alumina.
Oxide of tin. Nitrate of lead.
Tin-salt. Alum.
Carbonate of soda. Sulphate of soda. Phosphate of soda.
Tinate of soda. Cyanate of potassium. Chloride and bichloride of tin.
Oxide of uran. Tungstenic acid.
Vinegar. Potash.

14 Sanden Bernhard, Von, *Wiese and Marwitz, near Prussian Holland*—Producer.

Samples of raw and refined sugar from beet-root, the growth of the estate of Marwitz, belonging to the exhibitor, and produced at his sugar-refinery, being the first erected in the province of Königsberg, in the year 1850.

15 Christiani, C. H., *Kerstenbruch, near Wrietzen-on-the-Oder*—Producer.

Bottles of beer and extract of beer for ships' use, brewed without malt.

[Germany, generally, like all the northern regions of Europe, is less favoured by nature than the countries of the South, with their various gums and their oils; but she has abundance of other materials used as food.

Agriculture is by no means advanced in Germany to that degree of perfection which it has attained in England and in Belgium. But the manufactures of spirit and of sugar are carried on on almost every large estate included in the Zollverein to a degree of great perfection. In the manufacture of beer, especially, the Bavarian kind is universally celebrated.]

16 Farthmann, Captain, *Klein-Schwein* Manufacturer.

Dried "potato-cuts" (sliced potatoes), prepared in a peculiar manner, so as to keep for years. Fine potato flour; middling flour of the same; black flour; and bran.

Out of 100 lbs. of cut potatoes, prepared and dried by the exhibitor, were produced:—50 lbs. of fine flour; 14 lbs. of middling flour; 24 lbs. of black flour; and 6 lbs. of bran.

[It may be necessary to state that there exists a most important distinction between the flour obtained from potatoes and wheat flour. The latter is rich in nitrogenous principles, the former consists chiefly of starch, and its nutritive properties are proportionally low. The potash present in the potato is considered to form an important element in its adaptation to nutrition, as a source of supply of that substance to the animal economy.—R. E.]

17 Gross, J. D., *Berlin*—Manufacturer.

Vanille chocolates; Santó chocolates, without spice; spiced chocolates.

18 Päetsch, George Theodore, *Wrietzen-on-the-Oder*—Manufacturer.

Potato-starch syrup. This syrup, prepared from potato-starch and carefully purified, is clear and sweet, and is much used by the German brewers.

19 Kruse, A. T., *Stralsund*—Producer. (London Agent, Mr. Charles Jones, 17 *Mark Lane.*)

Starch, prepared from the wheat of the country round Stralsund.

20 Weill, C., *Berlin*—Manufacturer.

Various descriptions of fruits, preserved in sugar. Vegetables, preserved partly in butter, partly in their natural state. Potted larks.

21 Uechtritz, Landesedelster von, *Mühlraedtlitz, Silesia*—Producer.

Specimen of potato-starch.

22 The Royal Remounting Dépôt, *Treptow, Pomerania*—Producers.

Carded wool, the fleece of a ewe four years old, and of the Electoral breed; the weight of this fleece was after the shearing 4½ lb., including the fleece-wool. When younger the staple was larger, the weight of the fleece was somewhat higher, and the wool also plainer and less curled.

Carded wool, the fleece of a ram three years old; the weight of this fleece was after the shearing 5½ lb., including the fleece-wool.

Carded wool, the fleece of a ram four years old; the weight of the fleece was after the shearing 5⅔ lb., including the fleece-wool.

23 Thaer, A. P., Councillor, *Möeglin, near Wrietzen-on-the-Oder*—Producer.

Washed and raw wool-fleeces, from the staple flock at Möeglin, intended to illustrate the richness of wool with fineness of hair in the merino breed.

24 Lübbert, Eduard, *Zweibrodt, near Breslau*—Producer.

Specimens of wool.

25 Von Lipski, Ignatius, *Ludomy, near Obernick, Posen*—Producer.

Specimens of wool, in glasses, &c.

26 Hey, High Administrator of the Royal Domain—*Haynsburg, Sachsen*—Producer.

Wool-fleeces from the flock of the exhibitor at Hainsburg.

27 Royal Administration of Frankenfelde, *near Wrietzen-on-the-Oder*, Ockel—Exhibitor.

Fleece of a ram and of ewes, sheared in the spring of 1850.

Samples of wool, in show glasses.

28 Rothschild, Baron S., Von, *Oderberg, Silesia Superior*—Producer.

Fleece of merino ram, two years old; fleece of merino ram, three years old; fleeces of merino ewe and of its lamb; fleece of merino lamb three years old.

The flock from which these fleeces have been selected is said to be one of the most celebrated in Silesia; and out of it, sheep for breeding are sold to Silesia, Hungary, Galicia, and Pomerania.

29 Küepfer, Councillor of Legation, *Bromberg*—Producer.

Merino fleeces of two-year-old ewes.

Exhibited on account of the fineness and regularity of the wool-staple, and as an illustration of the advance of the production of wool in the Prussian countries of the Middle Vistula.

30 Nordmann, G. L., *Liszkowó, near Inowraclaw*—Producer.

Fleeces of wool, exhibiting great regularity in the staple.

31 Winkler, F., *Berlin*—Manufacturer.

An assortment of prepared, bleached, and dyed mushrooms and Venetian sponges. The finer raw sponges are imported from Italy, the Greek isles, and the Levant by way of Venice, Trieste, or Hamburgh. In the preparation the raw sponges lose from 50 to 75 per cent. in weight. The sponges purified by chemical process, as well as those dyed fast colours, are produced by a method invented by the exhibitor.

32 Eckardstein, Arnold, Baron of, *Reichenau*—Producer.

Fleece of wool, exhibited on account of the regularity of the wool-staple.

[Within the last few years the importation of wool into the Zollverein exceeded the general exports of that material from it; but under this difference of circumstances, that whilst "common" and "middling" sorts of wool of low prices are imported from Austria, Poland, Russia, and Turkey, the Zollverein exports an immense quantity of wools of the finest quality from Saxony, Silesia, the Marks, and Prussia (for the manufacture of the best cloths and fabrics), to Great Britain, Belgium, and France. Stolpen, Lohmen, Klipphausen, and Nischwitz in Saxony, Panten, Borutin, Chizelitx in Silesia, Frankenfelde, and Möglin in the Marks—all these places have acquired for their wools in Europe a reputation. The Zollverein specimens in this department of production, many of which appear also in the English and other departments of the Exhibition, will meet with much attention.]

33 Schwerin, Count of, *Wolfshagen, Ukermark*—Producer.

Fleece of a ram; fleece of a ewe.

The flock from which the above fleeces have been taken is of Saxon breed.

34 Ruffin, A., *Rüstern, Liegnitz*—Producer.

Flax grown in Silesia, and "swingled" after the Belgian method, in the royal flax-cultivation school for Lower Silesia; heckled flax prepared in the same school.

35 The Corporation of Millers, *Lissa*—Manufacturers.

Samples of ground millet; buckwheat groats; and oatmeal.

[The exports of the various kinds of grain, fibre and seed, flour, and other mill-ground stuffs from the Zollverein States, exceed the imports by a quantity equivalent in value to 18 millions of thalers, and those of wood by 3 millions of thalers yearly. Great Britain is the principal purchaser of these products of rural agriculture and forest cultivation. For her flax and her tow, likewise, Germany finds a market in England. Potatoes are not exported as such; but the principal consumption of this esculent takes place in distillation for the making of brandy. It is an error to imagine primary and important agricultural and horticultural products ill adapted for the purposes of a public exhibition. Various kinds of grain, of plants and seeds, are well entitled to attention by reason of their novelty, of the interest practically attaching to them, or of their utility, such as different species of peeled barley, flour, and batch made from them; sago, maccaroni, and vermicelli; dyeing articles, as wood, accompanied by dyed materials to show the effect produced; flax, hemp, tow, wool, and other products manufactured into linens, cordage, hurdle-work, paper, wadding, coverlets, baskets, hats, and mats. All these, so far as they possess a character of commercial importance, have been considered worthy of exhibition in the Zollverein.]

36 Ziegler, Baron Theodore of, *Dambrau in Silesia*—Producer.

Three fleeces of wool, unwashed, from sheep of the genuine Spanish breed.

[Wool constitutes in Germany one of the most important productions of her husbandry; and the Zollverein States, more especially with reference to the consideration of quality and quantity, must be regarded as among the most important countries for the most valuable branch of production. The Zollverein produces annually 48 millions and a-half cwt. of German wools from about 22,000,000 sheep.]

37 Lorenz, Gustavus, *Wolgast*—Manufacturer.

Samples of glue, exhibited on account of its clearness and perfect freedom from smell.

38 Bolzani, A. M., *Berlin*—Inventor and Producer.

A hanging spinning-hive for silkworms, on the principle of beehives, to prevent the production of double cocoons.

Cocoons of silkworms.

39 Kiszewski, *Paradies, near Meseritz, Posen*—Producer.

Specimens of raw silk, made of 4, 5, 6, and 7 twisted threads. Produced upon the property of the seminary of Paradies.

40 Tessler, D. F., *Stolp*—Manufacturer.

Two pieces of raw yellow amber, as cast up by the sea. Specimens of such dimensions are very rare; 100 dollars (15*l.*) are often paid for one pound.

Six pounds of amber beads.

Pieces of amber enclosing insects.

[From the researches of Dr. Karl Thomas it appears that under a nearly horizontal stratum of alluvial sand and coal-bearing clay, on the Samlandic coast, lies a stratum of amber earth. This has been explored where it rises above the level of the sea, and carbonized coniferous wood is found in it with organic remains. From the amber bed on the coast of Dirschkeim, extending under the sea, a storm threw up, on 1st January 1848, no less than 800 lbs. The amber "fishery" of Prussia formerly produced to the king about 25,000 crowns a month. After a storm, or an unusually high tide, the amber coasts are crowded with gatherers. Large masses of amber are occasionally cast up by the waves.—R. E.]

41 Tessler, C. L., *Stolp*—Manufacturer.

Piece of wood of the amber-tree; specimens of yellow amber as found under ground, and as thrown up on the shores of the Baltic Sea.

Set of yellow amber ornaments, consisting of necklace, bracelets, brooch, and pendants, of milk-white colour.

Amber necklace and cigar mouthpiece worked clear. Cigar mouthpiece worked dim; chibouque mouthpiece.

Smelling bottle; stand with two smelling bottles.

Snuff-box set in gold with the miniature of Frederic II.

42 Freiherr von Luettwitz, *Simmenau, near Ippeln*—Producer.

Samples of unheckled flax; extensively cultivated at Ippeln. Fleeces of wool, from the flock of the exhibitor.

43 Grüne, William, jun., *Berlin*—Manufacturer.

Newly-invented composition for dyeing wool; also patterns of woollen yarns of various colours dyed with it.

44 Heyl, J. F., & Co., *Berlin*—Manufacturers.

Specimen of colours, in paste, for painters and paper-hanging manufacturers; chemical substances and various boxes of colour.

45 Brünneck, Oberburggraf von, *Trebnitz*—Producer.

Fleece of a ram and of a ewe of the merino breed, from the exhibitor's flock at Trebnitz.

46 Brünneck, Oberburggraf von, *Bellschwitz, near Rosenberg*—Producer.

Fleeces of wool, indiscriminately selected.

47 Lehmann, Robert, *Nitsche*, near *Kosten*—Producer.

Fleeces of fine raw wool.

48 Holtzstamm, Bailiff, Frederick, *Berlin*—Producer.

Samples of silk-like vegetable particles, exhibited to show that such parts of plants may be employed in designs for the manufacture of articles, as a substitute for silk. Extracted by the exhibitor from plants found in Prussia and other countries.

49 Friedrich, C., *Potsdam*—Manufacturer.

Park-carriage or phaeton.

50 Gevers & Schmidt, *Goerlitz*—Proprietors.

Black and coloured broad cloths. Ladies' cloths, black and blue. Broad buckskin.

51 Wörden, C. A. Von, & Co., *Grabow, near Stettin*—Manufacturers.

A complete vertical steam-pump, with double working piston, &c., instead of the usual valve.

52 Heckmann, C., *Berlin*—Manufacturer.

Vacuum boiling apparatus of 6 feet diameter, with copper (double bottom) and tubes, for sugar refining; with manometer and thermometer. The copper and brass plates belonging to the apparatus, as well as the founding of the brass, were executed by the exhibitor.

The apparatus contains 80 cubic feet, Prussian measure (equal to 87 cubic feet English), sufficient for 245 loaves of sugar, at 30 lbs. weight each; it boils these loaves in 1½ hours, out of clarified mixture of 30 "Beaumé." Applicable for the manufacture of cane and beet sugars.

This apparatus is represented on the next page.

53 Bonardel Brothers, *Berlin*—Manufacturers.

Jacquard machines for various numbers of hooks; machine for striking out patterns for jacquard work; machine for cutting corks.

54 Doerffel, T., *Berlin*—Manufacturer.

Frill machine. A plaiting-machine for bobbinet and laces.

55 Leonhardt, J. Edward, *Berlin*—Manufacturer.

A newly-invented type-founding machine. Zinc as well as copper moulds can be employed in it without any alteration. Exhibited on account of the speed; the machine producing 4,000 types per hour.

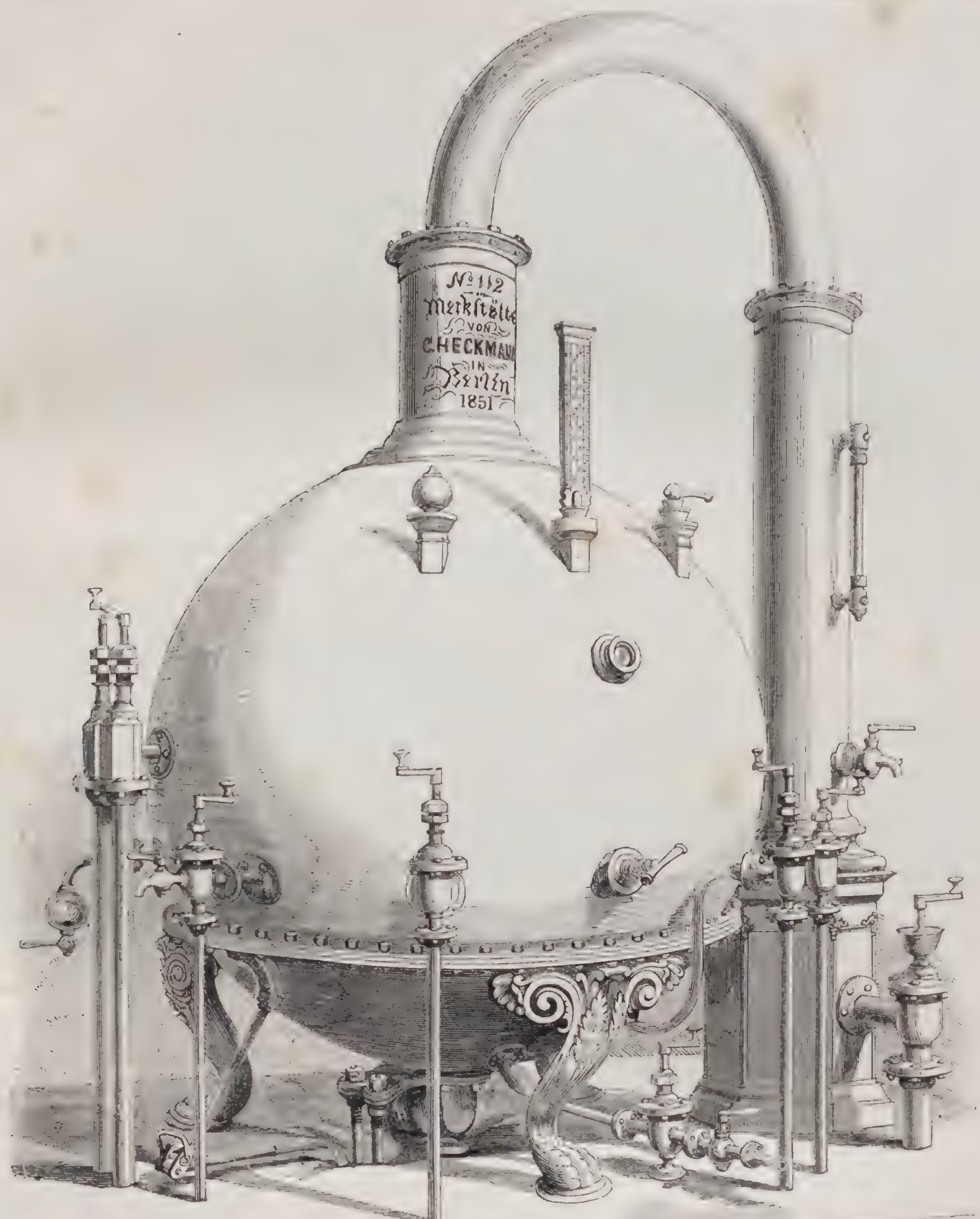
56 Winter, Ferdinand, *Berlin*—Manufacturer.

Two Jacquard weaving-machines; improved by the exhibitor, the hooks being so placed that they cannot turn when the machine is at work.

Two levers, belonging to the above-mentioned machines.

57 Thomas, Hermann, *Berlin*—Producer and Inventor.

A longitudinal shearing-machine, for shawls, with beating apparatus.



Heckman's Vacuum Boiling Apparatus.

58 **Hamann, A.**, *Berlin*—Inventor and Manufacturer.

A turning lathe of German material, exhibited on account of its cheapness; the bed 4 feet long, 4½ inches broad, and 4¼ inches high, with head-stocks 6 inches high, to the centre; 12 screw patterns and chisels; a plate with 8 divided rings and index; iron fly-wheel, to be turned by the foot; sliding and common rest; and other rest for supporting in case of boring with a drill, to bore chucks. A small rest with round pivot, attached to a sliding bed with holders for chisels and drills. A drilling-frame for ornaments. Upon the spindle are fixed, a universal chuck of 11 inches, with 4 stoppers; a smaller one of 8 inches, with holders moved by screws; an oval chuck; an eccentric chuck; a wire chuck with 3 holders, for wire of 1-3rd inch diameter. Chucks of wrought iron with 8 screws, 2 hollow chucks, chuck in the form of a drill, and chuck with a wood screw, 1 drill, 1 centre chuck, and 1 key.

59 **Renner, S. B., jun.**, *Breslau*—Manufacturer.

Specimens of a zinc roof after the construction of the exhibitor, which requires only a very small inclination, and by which the zinc can expand and contract according to the temperature. The fastenings of the plates withstand the most violent storms.

Models of the same on a similar scale.

60 **Gehrmann, T.**, *Berlin*—Manufacturer.

Priming-pin rifle-gun, inlaid with silver, half stock and hair trigger. Rifle, with full stock and hair trigger, arranged to receive a hunting-knife. Double-barrelled gun, with grooved barrels inlaid with gold and silver. Shooting implements.

61 **Luedlich, Wilhelm**, *Posen*—Manufacturer.

Rifle, with screw-driver, powder measure, and bullet mould.

62 **Ohle, Ernst Frederic**, Heirs of, *Breslau*—Manufacturer.

Samples of shot-tubes made by the hydraulic press, tinned inside and outside, and of ten different calibres. Pressed wire of different diameters. Red lead and litharge carefully prepared. String of bullets. Sheet lead tinned by an improved method:—all of Silesian lead.

63 **Grzybowski, H.**, *Potsdam*—Manufacturer.

A gun of fine workmanship, in a case of rosewood, mounted in German silver.

64 **Kehl, John Conr.**, *Berlin*—Manufacturer.

A pair of pistols, highly finished, with implements for cleaning, casting balls, &c. Gun-barrels finished by the exhibitor.

65 **Stolle, Dr. Edward**, *Berlin*—Inventor and Patentee.

Patent chaff-cutting machine for straw and other vegetable substances, containing a new application of vulcanized India-rubber. Manufactured by F. Thiele, Berlin.

66 **Bruckisch, Wilhelm**, *Koppitz, near Grotkau*—Proprietor.

Beehives on the Dzieron system, out of which the wax, honey, bees, &c., are easily taken. Erect double beehive; long low beehive; queen bee's basket; straw hive, entire, and divisible into parts; models of the same.

67 **Sprengel & Hartmann**, *Regenwalde, Pomerania*—Manufacturers.

Sowing-machine; drill-machine; Indian corn thrashing-machine; Flanders plough, altered by Schwarz; Pomeranian vibrating plough; Mecklenbourg hoe, with yoke; East Prussian scarifier, with yoke; 16-share crooker; underground plough; water-furrow plough.

68 **Guerlin, Pierre**, *Berlin*—Manufacturer.

Night-clocks; cartel bronze clocks. Sundry clock-works. Regulator-works.

69 **Krueger, Augustus**, *Bromberg*—Inventor.

Electro-magnetic self-registering anemometer. A system of four electro-magnets, each encircled with 50 feet of copper wire. The galvanic circuit is completed by quick-silver every hour by means of clockwork.

By means of this instrument the eight different points of the wind may be discovered at any time and at any distance; at the same time, the direction of the wind can be hourly written down by means of the clock.

[Hydro-electricity, which is the grand agent in operations of this kind, is different in the phenomena it exhibits from that of dry electricity, or that shown by an electrical machine. For whilst the latter exhibits its most remarkable properties, by accumulation, even at rest, as in the charged jar, the electricity of the galvanic battery is scarcely perceptible, unless that which is called the circuit be complete; which is the case when the poles of the galvanic battery are connected by a continuous piece of metal, as a wire, or other conducting substance, as water, then considering the battery as a conductor, and hence the circuit is completed. The electricity, during the time the battery is in action, moves through the circuit. This conducting circuit may be of any form.—J. G.]

70 **Kunst, Johann A.**, *Berlin*—Manufacturer.

Sets and half-sets of artificial teeth. Samples of enamel invented by the exhibitor for the manufacture of a single tooth or set of teeth.

71 **Bessalie, H. P.**, *Breslau*—Manufacturer.

Patent rosewood grand piano, with English mechanism and arrangement, for easier tuning and tightening the wires.

72 **Thiemke, A. F.**, *Berlin*—Manufacturer.

Brass travelling clock, in leather case, with stop and compensator to go eight days, strikes the quarters and hours, and repeats at every quarter the last hour.

73 **Gubicke, B.**, *Zossen, near Berlin*—Inventor and Manufacturer.

Grand piano in rosewood, with powerful repeating mechanism. The mechanism patented in 1849.

The piano was wholly constructed by the exhibitor himself.

74 **Siegert, C.**, *Stettin*—Manufacturer.

Complete vacuum-apparatus on a wooden stand; double working air-pump, with a wooden stand, belonging to the above.

75 **Seemann, Gustav**, *Warmbrunn*—Manufacturer.

Small house-clocks, exhibited for beauty and execution.

76 **Baumann, Theodor**, *Berlin*—Inventor.

An instrument for ascertaining the length of measures, after Bessel's mode. The micrometers are placed on a strong mahogany beam, and the slide, which carries the two measures to be compared, is so arranged that it moves them exactly behind one another in the micrometer line, and there retains them. One perfect comparison (which consists of eight measurements, to be executed 4 times in 24 hours) suffices to ascertain the length of 3 feet (1 yard) to within $0._{0002}$ lines; this requires only half an hour.

Two-yard measures, one of which represents the lawful and accepted measure; the other a copy, to be compared with the former.

77 Nobert, F. A., *Barth, near Stralsund, Province of Pomerania*—Manufacturer.

Glass plates, with divisions, applicable for observations with the microscope.

Ocular micrometer for telescopes, with clear lines in the dark horizon.

78 Tiede, Friedrich, *Berlin*—Manufacturer. (Agent, Mr. Oertling, London.)

Astronomical regulator, with linchpin and weight of brass, hook of wrought-iron, and polished wooden case.

Box-chronometer in pieces, in a polished case.

79 Pokorny, J. A., *Berlin*—Manufacturer.

Pill machine of iron.
Lapis infernalis mould, with twelve grooves.
Pill mortars of iron.
Luhmes' decoction spirit lamp.
Berzelius' lamp, with brass base and plate of china.
Improved Berzelius' lamp.
Gasometer, after Pepys.
Belt rifle-gun and pistol.

80 Westermann & Co., (Proprietor of the firm, G. Willmanns) *Berlin*—Manufacturer.

Grand pianoforte (rosewood).

81 Lüttig, C., *Berlin*—Manufacturer.

Levelling instruments.
Dioptric telescope.
Ruling machine.
Optometer, for ascertaining the distance of sight in trying spectacle glasses.
Ball and ring to demonstrate the expansion of metals by heat.
Case of mathematical instruments, of German silver.
Case of mathematical instruments, in brass.
Case, with instruments for drawing.
Camera obscura.

82 Baltzer, Adolph, *Frankfort on the Oder*—Inventor.

An Æolodion, a six-octave keyed instrument, with metal springs, or tongues, caused to vibrate by means of bellows. The tongues can be tuned several notes higher or lower by the turning of a key, fixed to a micrometer screw. A "crescendo," or "decrescendo," can be produced by means of the pedal.

Striking clocks, which go a year.

Pendulum clock, indicating the variation of the time at twenty different places.

[The invention of clocks has been ascribed to Boethius, A.D. 510, but clocks like those now used are of later invention. The first on record is one at Bologna, in 1356. Henry de Wyck, a German, made clocks about 1364; the nature of their machinery is preserved. Clocks were probably introduced into this country about 1368, by Edward the Third, and became common in the fourteenth century. Pendulum clocks were invented in 1641, by Richard Harris, London. At first, in contradistinction to the sundials, they were called nocturnal dials.]

83 Luhme, J. F., & Co., *Berlin*—Manufacturers.

Fluoric-acid apparatus of platinum.
A balance for chemical analysis.
Apparatus for the polarization of light; employed for saccharine substances.
Air-pump, with oblique action.
Kipp's sulphuretted hydrogen apparatus, of glass.
Blowpipe apparatus of platinum.
Balances for weighing 100 grains, 50 grains, and 25 grains.
Platinum bowls.
Platinum crucibles, with lids.
Berzelius and other chemical lamps, Mohr's balances; and a number of articles for chemical, philosophical, and pharmaceutical purposes.

84 Luppold, —, *Stettin*—Inventor.

Instruments for accoucheurs, composed of steel, ivory, and German silver, after Professor Busch's plan, improved by the exhibitor, by a head-screw, which, by turning the instrument by means of the hindermost head-screw, can be easily taken away and replaced.

85 Goldschmidt, S., *Berlin*—Manufacturer.

An assortment of surgical and philosophical instruments, bandages, artificial limbs, syringes, and a magnetic apparatus.

86 Reimann, L., *Berlin*—Manufacturer.

Balance, in a rosewood case, which weighs from one milligramme to one kilogramme; that is, from $\frac{1}{65}$ of a grain to 2½ lbs. avoirdupois. The middle or suspension knife-edge rests upon a polished stone, and the scale-knife edges, &c., are so arranged that the balance can be used without opening the case.

Set of gramme weights, of brass, gilt by galvanic process, from one gramme to one milligramme, with ivory forks and pincettes.

[This balance is remarkable for sensibility, as it turns with about the millionth part of the extreme weight which it can weigh; but it is not equal in this respect to the balance made by Ramsden for the Royal Society, which is capable of weighing 10lbs., and turning with one-hundredth of a grain, or the seven-millionth part of the extreme weight. The necessity of enclosing such delicate instruments in glass cases is manifest; but even in such circumstances they are affected by surrounding objects. Speaking of Ramsden's balance, Dr. Wollaston is reported to have said that when Mr. Pond was making some observations with it, he found its indications affected by his position relatively to the arms; the radiation of heat from his body causing the arm to which he stood nearest, to preponderate.—J. G.]

87 Oertling, August., *Berlin*—Inventor. (Agent in London, Mr. Louis Oertling, 13 Store Street.)

Chemical balance, with weights.
Balance for chemical and physical purposes, with weights, containing arrangements to weigh all descriptions of substances, and to ascertain specific gravity.
Balance for chemical and physical purposes, in large dimensions, with weights.
Hudley's sextant, 7½-inch radius.
Hudley's sextant, 5-inch radius.
Reflecting goniometer, of a new construction after Wollaston, with improvements by Mitcherlich and Poggendorf.

88 Hoffmann & Eberhardt, *Berlin*—Merchants and Manufacturers.

Complete assortment of apparatus and articles for chemical, philosophical, and pharmaceutical purposes.

Balance-beams, horn spatulæ and spoons, glass and metal cocks, test cylinders, blow-pipe, polished spatulæ, diamond pen to write on glass, stoppered bottles, receivers for air-pumps and gas, spirit lamps and retorts.

Microscopes. Model of a telegraph for schools. Polarization apparatus, diamond mortar of steel, thermo-electric chain, model of a steam-engine for schools, air pumps, Berzelius lamps, sun-dial for Berlin; various small articles in glass, &c., as funnels, corkscrews, &c.

89 Busch, E., *Rathenow*—Manufacturer.

Spectacle settings and glasses.
Telescope settings.
Assortment of lupines, opera-glasses, and daguerreotype heads.
Large telescope, with foot, and various others. Ear trumpet.

90 RUHMANN, A., *Eulam, near Landsberg, on the Warthe*—Manufacturer.

A guitar.

91 VOELKEL, J. G., & Co., *Langenbielau and Breslau*—Manufacturers.

Pieces of cotton stuffs for clothing, red inlet, Jacquard ticks, and bed-ticks. Table-cover.

92 DIERIG, CHRISTIAN, *Langenbielau, near Reichenbach, Silesia*—Manufacturer..

Jacquard diaper, fast colours, made of a warp of double-cotton yarn, united with English machine yarn; the same made of single-cotton twist, warps united with English machine linen yarn. Jacquard diaper, made of Chinese grass; the same woven of blue fancy silk and English machine linen yarn. Pattern of bed-tick, warp of crimson organzine silk, united with bleached Chinese grass yarn. Black and coloured glazed cotton shirtings.

93 NAUEN, LOEWE, & Co., *Berlin*—Manufacturers.

Various pieces of calicoes, printed in sundry manners. Woven by power-looms in Berrberg and Marklissa in Silesia, and bleached and printed at Berlin.

94 MENTZEL, Royal Prussian Privy Councillor of the War Department, *Berlin*—Proprietor.

A variety of samples of blue and grey military cloths, such as are supplied for the clothing of the Royal Prussian army.

Blue cloths:—

Patterns as used from 1817 to 1821, 1821 to 1824, 1824 to 1849, and 1849 to the present time.

Grey cloths:—

Patterns of the time previous to 1817, and as used from 1817 to 1821, 1821 to 1827, 1827 to 1829, 1829 to 1831, 1831 to 1849, and 1849 to the present time. Chiefly manufactured in the provinces of Brandenburg and Silesia.

95 FABIAN, C. G., *Humboldsau, near Breslau*—Manufacturer.

"Pine-needle wool" for upholstery, intended to guard against moths, and for wadding; sample of the same, dyed black, to imitate horse-hair. "Pine-needle wool" wadding mattresses, and cover. "Pine-needle wool" bolster and soles, combined with other materials. "Pine-needle wool" oil, used for medicinal purposes; extract for baths, &c. "Pine-needle wool" soap.

[Dr. Lindley observes, with reference to the article here described as "Pine-needle wool," that the only woolly tissue belonging to coniferous trees with which he is acquainted is a small quantity that covers their buds. If the articles exhibited are really what they profess to be, most probably the wool was obtained from this part of the pine-tree. Its medicinal properties, if they exist, are due to the resinous matter exuded by every part of the tree from which this "wool" is said to be derived.—R. E.]

96 WALD, C. F. & SON, *Zilenzig*—Manufacturers.

Woollen yarns, dyed and white, three and four fold.

97 ITZIGSOHN, MARCUS, *Neudamm*—Manufacturer.

Broad-cloths, light grey, grey mixture, and blue mixture.

Grey mixture cloth, finished, quality as used by the Prussian military for cloaks and trousers.

Leather-coloured cloth, as used for coaches, finished.

98 BEHREND & SCHMIDT, *Berlin*—Manufacturers.

Specimens of woollen cloth.

99 HABERLAND, G. AUGUST, *Finsterwalde*—Manufacturer.

Specimens of black cloth.

100 GEISSLER, CHARLES SAMUEL, *Görlitz*—Manufacturer

Woollen cloths, black, bronze, purple, blue, bottle-green, marine-blue, olive, red, green, dyed in the wool, gold, and bronze; manufactured out of Silesian wools.

101 RUFFER, S. B., & SON, *Liegnitz, Silesia* Manufacturer.

Imperial brown and blue woollen cloths dyed in the wool. Electoral woollen cloth, Gentian blue, dyed in piece; Segovia olive colour, dyed in the wool; Royal black, dyed in piece; and cashmere, dark-green, dyed in the wool.

102 SCHEDER, J., & Co., *Schweidnitz*—Manufacturers.

Specimens of buckskins and cloths for breeches, &c. Exhibited for cheapness of production.

103 LUTZE BROTHERS, *Cottbus*—Manufacturers.

Specimens of mulberry, olive, and black cloths.

104 COHN BROTHERS & HERMANN, *Berlin*—Manufacturers.

Woollen, cotton, and silk mixed stuffs; woollen, plain, and fancy stuffs; fancy woollen, and woollen and cotton mixed stuffs.

105 COCKERILL, WILLIAM, *Guben and Cottbus*—Manufacturer.

Raw and coloured carded yarns, spun of Pomeranian wool.

106 BERGMANN & Co., *Berlin*—Manufacturers.

Patterns of worsted zephyr yarns, best quality. The wools used for these zephyr yarns were manufactured by the United Spinning Company at Gotha.

107 FELLER, J. G., & SON, *Guben*—Manufacturers.

Black cloths. Black royal. Skeins of yarn employed in the manufacture of the black royal. The whole exhibited on account of their cheapness combined with quality. Manufactured from the raw wool, which is of Silesian, Pomeranian, Marchian, and Prussian growth for the broad cloths; the royal is manufactured from a mixture of Marchian and Australian wools.

108 SCHLIEF, SAMUEL, *Guben*—Manufacturer.

Various specimens of black cloth of Silesian and Posen wool, exhibited on account of the beauty of the work, and cheapness. Black satin.

109 FRIEDHEIM, S. M., & SONS, *Berlin*—Manufacturers.

Pieces of figured Orleans. Pieces of gros-de-Berlin. Pieces of plain Orleans.

110 HOFFMANN, ERDMANN, *Sorau, Lusetia*—Manufacturer.

Specimens of olive-green, bronze, and blue ladies' cloths. Black cloth.

111 TRAUGOTT MENDE & SON, *Finsterwalde*—Manufacturer.

Pieces of black cloth, various; manufactured out of Silesian wool.

112 BORMANN, F. A., *Goldberg in Silesia*—Merchant and Manufacturer.

Various pieces of cloth, dyed in the wool, black and blue, dark green and red.

113 MARX & WEIGERT, *Berlin*—Manufacturers.

Cashmere shawls, in sundry colours and designs. Mohair, woollen, and cotton velvets.

114 LEVIN, HENRY, & SONS, *Berlin*—Manufacturers.

Cravats, silk, silk and cotton mixed. Waistcoats, silk, worsted and silk, and embroidered. An assortment of silk and cotton plush. Loose patterns of sundry silk, and silk and cotton articles.

115 Weigert & Co., *Schmideberg, Silesia*—Manufacturers. (Agents, Messrs. Smithson & Co., Fenchurch Street.)

Cashmere shawls:—Green velours d'Utrecht, first quality. Coloured and figured velours d'Utrecht, various qualities. Castorine. Pallas, various qualities. Tallupp. Transparent. Leopard. Oval cloaks worked on the loom.

116 Oehme, C. W., *Berlin*—Manufacturer, Inventor, and Proprietor.

Plush for hats; exhibited for colour and texture; manufactured of Italian and French silk, and of cotton spun in England.

Patterns of silk plush for caps.

117 Kauffmann, Herrmann, *Berlin*—Inventor and Manufacturer. (Agent in London, Mr. Carl Schwebemeyer, 314 Oxford Street.)

Plush for furniture, in real colours. Printed plush for furniture, designs of various colours.

Livery plushes, of various qualities.

Plush for coats, paletôts, and shoe garnitures.

A large assortment of cap plush.

Velours of cotton (Castorine).

A variety of other plushes.

118 Schäerff, Robert, *Brieg*—Manufacturer.

Set of small ware, composed of broad and small silk and worsted borders, tassels and gimps, intended for a state chariot. Sets of small ware, less costly, intended for barouches. Various articles of small ware, as bridles, gun-ribbons, girths, &c.

119 Gabain, G., *Berlin*—Manufacturer.

Various silk goods. Silk and cotton, silk and gold, and silk and silver goods; of original designs.

120 Kirstein, Charles, *Hirschberg, Silesia*—Proprietor.

Linen, made of hand-spun yarn. Linen, warp, of machine-spun yarn, weft, of hand-spun yarn. Half linen. Handkerchiefs, of hand-spun yarn.

Manufactured by the weavers in the neighbourhood of Hirschberg, Prussia.

120a Kirstein, Charles, *Hirchberg, Silesia*—Proprietor.

Samples of drugs collected in the neighbourhood of Hirschberg, viz.:—Lovage, hellebore, valerian, Iceland moss, angelica root, bilberries.

121 Seylers, Gottfried (Heirs of), *Wüstewaltersdorf, Silesia*—Merchants.

Bleached $\frac{8}{4}$ yard linen, for the South American markets.

122 Websky & Son, *Wüstegiersdorf, Silesia*—Manufacturers.

White linen. Nos. 101 to 109 are exported to America under the name of Platillas.

123 Kauffmann, Meyer, *Schweidnitz*—Manufacturer.

Half-linen Jacquard drill, red, violet, and reddish-grey.

Half-worsted damask for furniture.

Half-linen and worsted stuff for apparel.

124 Rimann & Geisler, *Hirschberg, Silesia*—Proprietors.

Four pieces of bleached linen, warp of machine yarn, weft of hand yarn.

125 Engel, Ernst, jun., *Gorlitz*—Manufacturer.

Hunting-bag made out of hemp pack thread, with ornaments.

Samples of two and three cord extraordinary fine hemp-twine.

127 Stiller, A. E. & Son, *Sorau*—Manufacturer.

Linen and half-linen damask ticking; table-cloth and napkins.

128 Kramsta, C. G., & Sons, *Freiburg, in Silesia*—Manufacturers.

Raw and bleached linens, as well as creas and platilles royales. Dessert napkins. Linen handkerchiefs. Diaper, jacquard, and damask table-cloths and napkins. Raw linen machine yarn. Sample of starch.

129 Prentzel, Johann Chrys., *Greiffenburg, Silesia.*

Various specimens of linen pocket handkerchiefs with woven cotton borders, worked on a common loom.

130 Tschorn & Bürgel, *Wustegiersdorf*—Manufacturers.

Four pieces of raw and white household linen; Nos. 1 and 3, 2,400 warp threads; Nos. 2 and 4, 3,200 threads.

131 Schildknecht, C. F., *Berlin*—Manufacturer.

Four pieces of satin d'Amérique, manufactured out of the *Agave Americana*, for furniture. Shawls of various fabrics.

[*Agave Americana* is the botanical name of the splendid American aloe, fabulously said to flower only once in a century. The roots and leaves of this plant contain ligneous fibre, separable by steeping and bruising. It is also used for making paper, and furnishes several valuable products. The ligneous fibre constitutes the basis of the tissue referred to.—R. E.]

132 Sussmann & Wiesenthal, *Berlin*—Manufacturers. (Agent in London, Charles Holland, 41 Finsbury Circus).

Assortment of various articles, manufactured by the exhibitors from the raw material, including plaids, broché, fides, umbrella, and lucille, manufactured out of cotton warps and woollen-yarn wefts; Esmeralda and umbrella China, out of cotton and silk warps, with woollen yarn and silk weft; tartan, all wool, warp and weft.

133 Meyer, Max, & Co., *Berlin*—Manufacturers.

Coloured cotton and silk, mixed plush. This article is exported to North America.

134 Opdenhoff & Hartung, *Berlin*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Shawls of various kinds. Plaid, tartan, &c. Woven and finished by the exhibitors. The woollen yarns used are of German make, except two articles, which are worked partly with English yarns.

135 Pintus, H., jun., & Co., *Brandenburg*—Manufacturers.

Embroidered Llama stuff; Cachemir mixed with silk; double Chiné; Chiné; ermin; Cachemir; and imperial. Manufactured from carded yarns.

136 Lehmann, D. J., *Berlin*—Manufacturer. (Agents, Messrs. Ullmann, Hirschhorn & Co., 2 Walbrook Buildings, London.)

Velours d'Utrecht, for furniture, &c.

Plush for caps, waistcoats, collars, coats, and linings.

Square and double long shawls.

Stuff for cloaks.

Velvet printed table-covers.

The velours d'Utrecht and plush are manufactured partly of linen and partly of double cotton warps, with mohair yarn weft.

The shawls are manufactured some of wool and some of cotton warps, with carded yarn weft.

The stuff for cloaks is made in the same manner.

137 **Cohn, Philipp, & Co.**, *Berlin*—Manufacturers.

Assortment of woollen, half-woollen, and woollen with cotton and silk mixed, square and long, shawls.

138 **Lehmann, Heinrich**, *Berlin*—Manufacturer.

An assortment of deerskin, kid, and lambskin gloves.

139 **Koenig, L.**, *Berlin*—Manufacturer.

A fur camaile, composed from tails of narz, lined with minever.

140 **Lusk, Adolph**, *Berlin*—Manufacturer.

Walking-sticks, riding whips, life-preservers, of whalebone and cane, covered with leather.

141 **Becherer, Johann**, *Berlin*—Manufacturer.

Specimens of horse and other whips.

142 **Grutzmacher, G. F., & Sons**, *Stettin*—Manufacturers.

Brown calf-skins.

143 **Koppe, Albert**, *Berlin*—Manufacturer.

Assortment of card-board, stone, wood, and leather fancy articles. Alarums; desks with mechanism; needle-sharpeners; a Christmas tree, the cupola can be transparently illuminated by the lamp inside of it; a night-lamp stand.

144 **Beyerhaus, A.**, *Berlin*—Manufacturer.

A print in Chinese characters. 4,200 punches in these Chinese characters have been cut in steel for the American Missionary Society in New York. The types are divisible on a new perpendicular system; and form, by combination, 24,000 different characters.

145 **Ebart Brothers**, *Berlin*—Manufacturers.

Hand papers for bank-notes, &c., and machine papers sized in the pulp state with animal glue, from the paper mill at Speckthausen, near Neustadt, Eberswald. The same, highly sized.

Samples of glazing-boards and carton-pierre, for roofing, from the paper mill of Weitlage, near Neustadt, Eberswald.

146 **Glanz, P.**, *Berlin*—Manufacturer.

An assortment of sealing-wax, in various colours and of various qualities.

147 **Liepmann, Jacob**, *Berlin*—Inventor.

Mass of colour, for printing in oil; 1½ inch thick, and will serve for 1,000 copies; the masses can be formed to serve for 100,000 copies.

[The masses here exhibited are intended to form a convenient substitute for the ordinary semi-fluid printing inks.]

Relief plate, upon which the printing takes place, being a cast from a surface painted with a brush,

Printed picture, from the two foregoing plates, representing the Magdalen, after the original picture of Murillo in the Royal Museum, Berlin.

Another mass of colour, forming a border, and intended for ornamental printing.

Specimens printed by the composition.

Specimens of the different methods of printing; portrait of the painter Kupetzky, printed upon plaster of Paris; picture of the Saviour on wax ground; another on paper, with oil ground; portrait of Frederic the Great upon paper, with wax ground.

148 **Decker, Rudolph Ludwig**, *Berlin*—Manufacturer.

The Bible, in royal 8vo, as printed for the General Bible Society in Prussia.

The same, in small octavo, on finer paper.

The Psalms and New Testament. Miniature edition.

The same, on finer paper.

Five volumes of the works of Frederic the Great, in large 4to. This edition was printed by order of His Majesty the reigning King of Prussia.

Sixteen volumes of the same works of Frederic the Great, in large 8vo. These editions were superintended by the Royal Academy of Sciences. The former is not for sale.

Specimens of printing-types.

The New Testament, after the German edition of Dr. Martin Luther, of the year 1545.

This edition of the New Testament, in large folio, was undertaken by the exhibitor, and executed under his particular direction. Only one hundred copies have been struck off. The paper is of Berlin manufacture. The types were cut in steel by Johannes Schilling. The drawings of the initials are by Adalbert Müller. The wood-cuts were executed by Professor Unzelmann, M. Otto Vogel and M. Albert Vogel, and under their direction. The illustrations were designed by Cornelius and Kaulbach; drawn on wood by M. L. Burger, and executed by the above-named engravers. The binding in velvet is by Mr. Vogt. The silver ornaments on the cover and the clasps were designed by M. Adelbert Müller, and executed in embossed work by M. Netto.

The steel punches of the types engraved for the New Testament.

Printing-types as used for the same.

Printing-types of English characters.

Electrotype multiplications of wood-cuts and ornamented letters.

Specimens of brass rules, as manufactured at the letter-foundry.

Matrices in copper.

149 **Leisegang, William**, *Berlin*—Manufacturer.

Album of velvet, gilt, containing forty-five leaves of paper, with lock. The method of gilding the velvet is patented.

150 **Osten, L. V. D.**, *Stralsund*—Manufacturer.

Printed carpets; table-covers. Large and small pictures, printed upon muslin. These pictures may be washed, and the painting is said to be improved by the operation. Very rare copies of woodcuts, after Albert Durer. Packs of whist cards and cards for ladies.

151 **Wuttig, G. L.**, *Pulverkrug, Frankfort on the Oder*—Manufacturer.

Machine-paper, coloured or stained, in sundry sizes and qualities.

152 **Kühn, Carl, & Sons**, *Berlin*—Manufacturers.

Ledgers of different dimensions, bound in leather and morocco. Pattern card of ruled sheets. Large case of red morocco, for keeping copper-plates, prints, &c. Large portfolios and coloured sample sheets. Portfolios, for bills of exchange. Pocket-books, for paper and notes. Portfolios, in blue and brown morocco. Albums, in blue velvet and in morocco. Portfolios, with partitions and silk linings. Cigar cases. Porte-monnaies. Portfolios in quarto. Albums and books in octavo.

153 **Schaefer, Otto, & Scheibe**, *Berlin*—Manufacturers.

Samples of ornamental papers. The drawings and patterns are partly original, partly imitations of older patterns. The plates from which these impressions were taken are prepared by the electro-type process from papier-maché moulds. Embossed and visiting cards. Specimens of papeterie in boxes and portfolios. Fancy envelopes.

154 Schoening, Hermann, *Berlin*—Manufacturer.
Album, in dark red velvet, gilt.
Altar Bible, in morocco leather.

155 Wagner, J. G., jun., *Berlin*—Manufacturer.
Proofs of engraving in copper, steel, metal, wood, and lithography, executed by the ruling and relief copying-machines of the exhibitor. These machines are frequently used in ornamenting cheques, &c., for greater security against imitation.

156 Moeser & Kühn, *Berlin*—Manufacturers. (Agent in London, Mr. Green, 17 Gough Square, Fleet Street.)
Specimens of letter-press printing in three or more colours, by a new process, and paper, used for colour printing, of a peculiar manufacture, by a new process.

157 Karschelitz, Siegfried Nomme, *Berlin*—Manufacturer.
An assortment of printed cashmere table-covers.

158 Trautwein, T., *Berlin*—Publisher.
Map of the industry of Central Europe, drawn on linen. The same, upon roller.

159 Stephan, A., & Co., *Berlin*—Manufacturers.
Pieces of cotton-twill dyed, partly without finish, partly glazed and embossed. Exhibited only on account of the colours and the finishing.

160 Schleuss, H., *Berlin.*
Assortment of embroideries in mosaics, &c. A fire-screen.

161 Stief & Harrass, *Potsdam*—Manufacturers.
Specimens of embossed silk; the texture represents the Neptune grotto, built by Frederick the Great, at Sans Souci. These specimens deserve particular notice, on account of the superior workmanship. Designed by the exhibitors. The raw silk woven at Sans Souci, in 1848.
Gentlemen's silk cravats. Silk waistcoating. Pieces of silk and cotton waistcoating. Silk and cotton embroidered waistcoat. Silk embroidered waistcoats.

162 Seiffert & Co., *Berlin*—Manufacturer.
Berlin paper pattern, for embroidery.

163 König, C. A., *Berlin*—Manufacturer.
Large carpet, embroidered in the cross-stitch manner, executed in silk and worsted, and filled with drawings referring to the Great Exhibition. Bed-screen, consisting of three parts, embroidered in wool and silk, after original drawings, with rosewood frames. Embroidery for a fire-screen on silk canvas, in the velours d'Utrecht fashion. Embroideries extra fine, petit-point in silk, in frame and glass. Child's bed-cover, filet-work in silk.

164 Burchardt, B., & Sons, *Berlin*—Manufacturers.
Various pieces of printed oil-cloth; the same, for table covers; painted window blinds; double floor-cloths, with and without borders; patterns of hat-linings; double linen oil-cloth for carriages; carpet; oil-cloth for sofas.

165 Lipke, W., *Berlin*—Manufacturer.
Sofa and other carpets and rugs of machine-made felt; sofa carpets of woven texture.

166 Gruenthal, —, *Berlin*—Manufacturer.
Various paper patterns for embroidery:—Lady Jane Grey refusing the English crown; General Washington; David and Saul; Madonna and Child; Boy playing; seat and back of a chair, &c.

167 Lehmann, M., *Berlin*—Manufacturer. (Agents in London, Messrs. Jonas Simons & Co., 46 Lime Street.)
Oil-cloths, printed with gold dust, and different colours. Round table-covers. Painted window blinds. Patterns of a new waterproof elastic cloth, for railway waggons, &c. Floor-cloth with border, painted like a rugged carpet. Common floor-cloth.

168 Neie, F. W., *Berlin*—Manufacturer.
Berlin paper patterns for embroidered fire-screens, new composition.

169 Parey, C. F. W., *Berlin*—Manufacturer.
Embroidered carpet, in wool.

170 Rudloff Brothers (P. Truebe), *Berlin*—Manufacturers.
Berlin paper patterns for embroidery, representing Cardinal Ximénès, Laban and Jacob, and Hagar in the desert.

171 Todt, A., *Berlin*—Manufacturer.
Paper patterns for embroidery.

172 Adolphi, C. F. W., *Berlin*—Manufacturer.
Ladies' boots of white satin, French and varnished leather, and goats' leather with waterproof soles, and shoes of yellow morocco and bronze leather and white satin. Ladies' slippers. Children's boots. Over shoes, with metal springs.

173 Sommerfeld, B., *Berlin*—Manufacturer.
Embroidered altar-cloth.
Specimens of embroidery — Scotch landscape; and Moses in Midian.
Assortment of embroideries, on pocket-books, cigar-cases, porte-monnaies, &c.

174 Beckh Brothers, *Berlin*—Manufacturers.
Brussels carpet in Turkish style; Brussels carpet flower-pattern; Brussels carpet arabesque pattern, in one piece; and a variety of carpets with figures.

175 Dinglinger, A. F., *Berlin*—Manufacturer.
Velours carpets. Rugs. Velours for travelling-bags.

176 Glüer, Louis, *Berlin*—Manufacturer.
Berlin paper patterns, "The Descent from the Cross," after Rubens. George Washington, and Albert, Prince of Wales.

177 Andresen, Peter, *Berlin*—Manufacturer.
Pair of morning shoes, with embroidery in gold. Pair of riding boots, with white tops. Pair of waterproof boots, with black tops. Pair of cork boots, of varnished leather. Pair of boots, of calf leather. Pair of ball boots, for officers in the army. Boots of varnished leather. Boots and clogs of different sorts. Pegs, made by Mr. Mielert Stallschreiberstrasse, for fastening the soles of the boots instead of sewing them.

178 Freystadt Brothers, *Berlin* — Manufacturers. (Agents in London, Krohn Brothers, Bread Street.)
Silk-shag hats, worked upon felt and chip.
Lady's riding-hat, with veil.

179 Plessner, S., *Berlin*—Manufacturer.
Goat and doe-skin gloves. Washable kid gloves for ladies and gentlemen; the same, with only one principal seam. Ornamented gloves, for ladies. Braces, of fine wash leather. Silk braces.

180 Wolter, G. C., *Berlin*—Manufacturer.
Coloured kid gloves for ladies and gentlemen; lamb-skin gloves for ladies; deerskin gloves for gentlemen. Ladies' dress and other gloves.—All of German manufacture.

181 SELDIS, E., *Berlin*—Manufacturer. (Agent in London, Mr. CARL SCHWEBEMEYER, 314 *Oxford Street.*)

An assortment of felt hats, silk-shag hats, black and coloured felt bonnets, imitated felt hats, imitated felt bonnets, and dolls' bonnets. Several of these articles are made of new material usually rejected. The form is in one piece without a seam.

182 LIETZMANN, J. C. H., *Rummelsburg, near Berlin*—Manufacturer.

Shoe vamps and legs, of various sizes and forms.

The leather from which these articles are cut is tanned by a patent process invented by the exhibitor, which is stated to render it durable and waterproof.

183 MUELLER, J. L., *Berlin*—Manufacturer.

Ladies' and gentlemen's boots for deformed feet. Feet and lasts modelled after nature.

184 PFEIFFER, C., *Berlin*—Manufacturer.

An assortment of single and double-soled boots and over-shoes.

185 SCHNEIDER, F., *Potsdam*—Manufacturers.

Lamb-skin, goat-skin, and kid gloves.

186 VASSEL, S., & Co., *Berlin*—Manufacturers.

Silk hats, for gentlemen and boys. White and grey beaver hats. White, black, and natural beaver ladies' hats. Silk riding hats, for ladies. Felt hats.

186A MOHR, W., *Berlin*—Manufacturer.

White satin boots. Boots of chamois leather. Ladies' clogs. Gentlemen's clogs, varnished leather. Enamelled leather boots and clogs. Calf-leather boots, complete, but internally fitted for a deformed foot.

Model of a deformed foot, externally resembling ordinary boots.

187 HENKELS, J. A., *Solingen and Berlin*—Manufacturer.

Three glass cases, containing a large assortment of table, hunting, pen, pocket, and other knives, daggers, sword blades, surgical instruments, &c., manufactured of refined steel, the produce of the smelting works of Siegen.

188 BARDFELD, CHRISTIAN, *Posen*—Manufacturer.

White and slate-colour reindeer-skin breeches. Deer-skin gloves and braces. Leather braces. Knee girths.

189 ARNHEIM, S. J., *Berlin*. (Agents, Krohn Brothers, 1 Bread Street, London.)

Iron-safe bureau. The large doors, cases, and locks, open and shut, notwithstanding their great weight, with perfect ease. Exhibited for workmanship.

190 ZOBEL, WILLIAM, *Berlin*—Manufacturer.

A variety of sliding lamps, of sundry dimensions, and regulator lamp, silvered by the electro-plating process. Brass lamps. Lamp with spring pressure, electro-plated. Lamp for cooking; and lanterns.

191 VON MINUTOLI, ALEXANDER, Councillor, *Liegnitz*—Proprietor.

Samples of Silesian marble plates, sketched by the exhibitor; executed by Mr. Laverdare, sculptor in Breslau.

Photographic copies of models for manufactories in clay, glass, or wood, executed by the photographer Birk, at Hirschberg.

Phelloplastic model of the ruins of a Gothic church; an attempt to execute Gothic architecture instead of Roman, in cork.

Parts of chimney-pieces in a greenish glaze and in a brown glaze, and gilt. A square plate of the same material.

Brown glazed chimney-piece, to exhibit the application of clay formerly only used for pottery to finer objects. The designs and models were produced by the exhibitor and executed by Mr. Pockle.

Crystal glass decanter, after a sketch by the exhibitor; executed by the glass-painter Finsch, at Warmbrunn.

192 LOEFF, S., *Berlin*—Manufacturer.

Porcelain coffee machines and tea pots.

Porcelain sliding and table lamps.

The porcelain made at the Royal Manufactory, Berlin.

193 GAERTNER, AUGUST, *Stettin*—Manufacturer.

Cage for a parrot, in German silver.

194 KUMMER, K. W., *Berlin*—Inventor.

Globe in relievo, of 4 feet diameter, consisting of two hemispheres to be put together, with a bronzed pedestal of papier maché; proportion of elevation, 1 : 10. The exhibitor, in constructing this globe, has availed himself of the latest maps and of the suggestions of Professor Ritter. In the execution of the elevations, regard has been had not only to the summits of the mountains, but also to the highlands, rivers, and towns. Both the entire globe and single segments of the same are prepared for the blind, and for such as enjoy vision, in two editions, the one only with the names indispensably necessary, the other, with more detail, containing the names even of the smallest places, so that the roads of caravans may be traced on it.

195 ZOBEL, JULIUS, *Berlin*—Manufacturer.

Varnished tin articles, representing *Calla æthiopica* in blossom, with tin pots. Amaryllis, in blossom. Embossed fruit baskets. Bread baskets, with pierced edges; and with fine network. The first two articles embossed after nature, in tin-plate, by the exhibitor.

196 KOLESCH, H., *Stettin*—Manufacturer.

Iron safe. It is said the locks are so constructed that they cannot be opened by skeleton keys or any similar instruments; nor can they be opened by any one unacquainted with the secret, even with the right key.

197 LEHMANN, A. F., *Berlin*—Manufacturer.

Cast-iron balcony decoration; cast-iron crucifix, and altar candlesticks. Warwick vase. Group of warriors. Fruit basket. Jewel case. Small statues, busts, &c. Small cast bracelets, brooches, crosses, rings, &c., and various plated fancy articles, &c. Ornamental cast-iron fountain. This fountain is represented in the illustration on the next page.

198 LEWY BROTHERS *Frankfort on the Oder*—Manufacturers.

A variety of cast and japanned articles, consisting of lamps with pedestals, candlesticks, baskets, sugar-box, pails with covers, water-receivers for pipes, writing-desks, &c.

199 STOBWASSER, C. H., & Co., *Berlin*—Inventors, Manufacturers, and Proprietors.

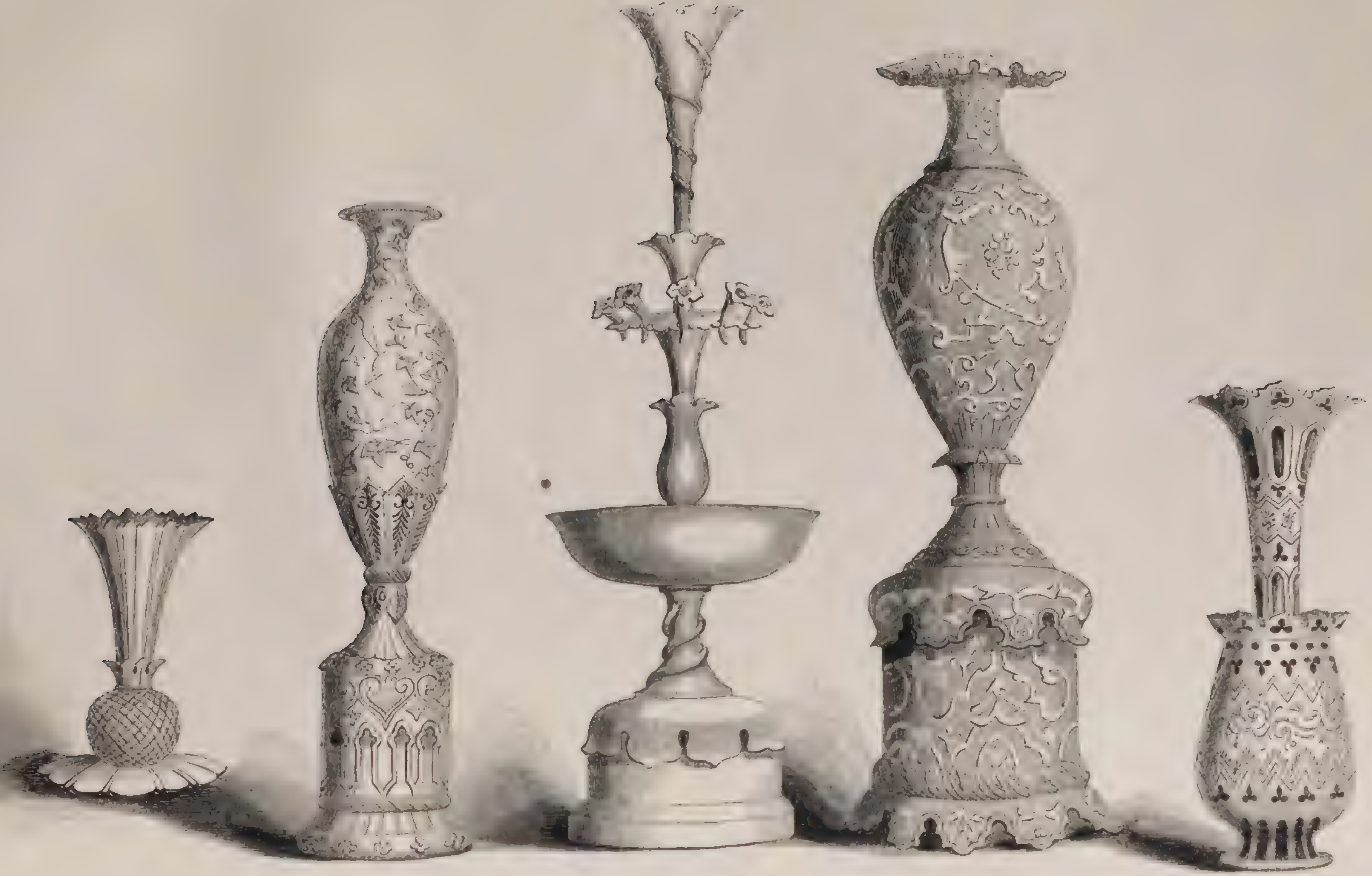
A large assortment of japan articles, ornamented with paintings, in imitation of agate, malachite, tortoise-shell, &c. Tea-boards, caskets, bread-baskets, &c. Lamps, in German silver, bronze, brass and composition, gilt, &c.

200 EGELLS, F. A., *Berlin*—Manufacturer.

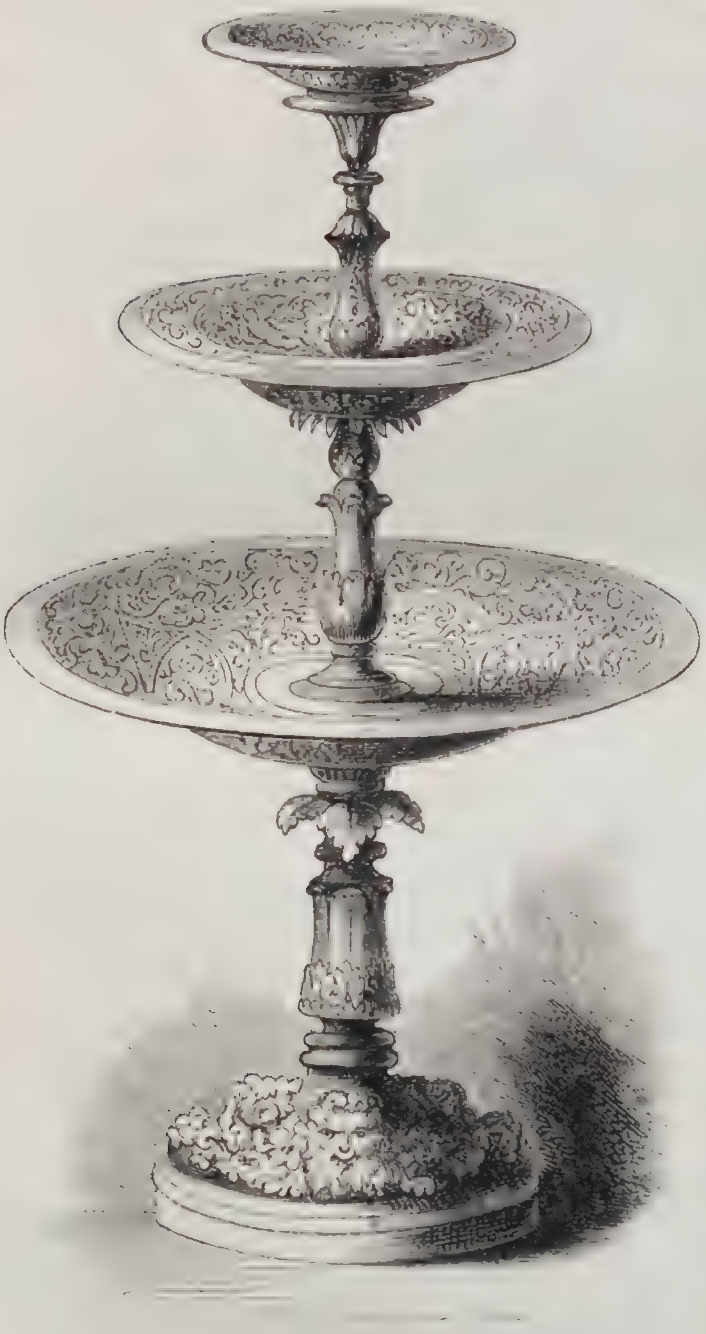
Cast-iron chimney piece, varnished; two side-pieces of cast-iron.

201 MUELLER, J. F., *Muncheberg*—Manufacturer.

Leather bridles, with steel bits and snaffles. Hunting pocket, with a net.



103. SPECIMENS OF ORNAMENTAL GLASS, ZOLLVEREIN.



Lehmann's Ornamented Cast-iron Fountain.

202 **Schwartz, C.**, *Berlin*—Inventor and Manufacturer.

A golden brooch, representing a lion fighting with a serpent, in brilliants and roses.

A golden bracelet, representing an angel resting on flowers, with diamonds.

A golden flexible bracelet, with four brilliants.

A golden flexible bracelet, with oak leaves and brilliant.

A golden brooch and a pair of studs, with oak leaves and brilliants.

203 **Schneider, F.**, *Berlin*—Inventor.

Writing-stand, partly of gilt silver and partly of gold, under a glass cupola, upon a rosewood column.

Daguerreotype-plates, plated by galvanic process, and levelled without hammering.

204 **Winterfeld, Johann Albert**, *Breslau*—Manufacturer

Articles in yellow and white amber: Vase of yellow amber; set of chess-men; set of ladies' ornaments of yellow amber; set of ornaments; pipes; ear-ring tassels; ear-rings; bracelets; knife and fork in a box; fruit-knives, with silver blades; paper-cutter; sets of buttons for ladies' dresses; tassels; hook-boxes; pen-holders; frames for knitting-needles; pen-knives; breast-pins; amber top with a meerschaum pipe; and various other articles in yellow amber.

205 **Jantzen, G. E.**, *Stolp*—Manufacturer.

A set of yellow amber ornaments chased with gold; the same, clear and pale.

Sewing-box of yellow amber.

String of yellow amber beads, with a cross hanging from it chased with gold.

Toilet table, bearing a tureen, two candlesticks, and six wine glasses, all of yellow amber.

[Amber is the fossil resin of various extinct species of coniferous trees, allied to the firs and pines of the present age. It is chiefly found on the southern coast of the Baltic.—J. L.]

206 **Strahl, Otto**, *Frankfort on the Oder*—Manufacturer.

Gilt and decorated fruit-vases. Coffee and tea-service. Several gilt and decorated cake-dishes, cabarets, &c.

Assortment of white crockery ware of the best description, consisting of dishes, tureens, saucers, plates, cake-dishes, &c.

207 **Bergmann, William**, *Warmbrunn, near Hirschberg, Silesia*—Producer.

A collection of octagonal and oval topazes from the Giant Mountains, valuable on account of the size, purity, and colour of the stone: it may be considered as a scale of the colours of the topaz. Large topaz seal-stamps. Large topaz cane-heads. Impressions of seals.

208 **The Glassworks of the Count of Schaffgotsch**, *Josephinenhütte, near Warmbrunn.*

Flower decoration. Colossal ruby vases.

Enamel-like flower-vases. Ananas and other vases.

Aquamarine enamel vases, with gilt decoration. Sugar-water set.

Violet-vases. Decanters. Large cups with covers.

Vases for cabinets. Small vase with handle.

Chalice-glasses, with carved arabesques, and with handles carved.

Crystal-enamel vases.

These specimens are exhibited on account of the clearness of the cutting, and the polish of the gilding, as well as for the beautiful work of the various glasses and vases in the Venetian style.

Specimens of these articles are represented in the adjoining Plate 103.

[The German coloured glass, although extensively imitated, has always maintained that good estimation which it possessed long ago. It has realized a high point of perfection in colour, grinding, and form. In what is called "white glass," or "lead glass," our German industry requires prompt resuscitation and careful support, if we would not see it altogether overwhelmed and suppressed by the products of Belgium and of England in this line of manufacture, as well as of France.

Of glass, the Zollverein exports exceed the imports by an amount represented by 677,000 thalers yearly. These exports consist chiefly of plate and of concave glass, as well as of coloured, ground, and fancy-gilt glasses; but the highest degree of perfection must be conceded to the Zollverein glasses for chemical, pharmaceutical, horological, and physical uses.]

209 **Willmanns, C. W.**, *Berlin*—Manufacturer.

Cut plate-glass, representing the theatre and the two turrets of the churches adjacent, on the Gendarmes Square at Berlin.

210 **Count Solms**, Administrator of the Glass-works of Baruth and Friedrichsthal—Manufacturer.

An iron frame, containing samples of coloured flat glass.

Coloured circular slabs for watch-dials, scales for thermometers, &c.

Cylindrical lamp glasses.

A variety of tumblers; wine, champagne, and liquor glasses; milk-glass; lamp-screens.

Coloured bottles; glass pipes in imitation of wax tapers for gas mountings.

211 **Finsch, Moritz**, *Warmbrunn, Silesia*—Manufacturer, Inventor and Patentee.

Punch-bowl, with cover, spoon, tray, and glasses. Vases of alabaster-glass. Decanter, with glasses and tray. Wine-cup, with white opaque lines; and with deep and raised cut decorations upon a dull ground. The decorations are polished in a peculiar manner in the fire.

212 **Metzger, U.**, *Proprietress of the Glass-Works at Zechlin, near Rheinsberg.* (Agent, Luhme & Co., Berlin.)

Various glass articles for chemical or experimental purposes.

213 **The Royal Prussian Porcelain Manufactory**, *Berlin.*

Large tureen, or hotch-potch dish, with lid.

Vase representing the twelve apostles, after statues by Peter Vischer.

Vase, with paintings after Miéris and Slingeland, in the Royal Saxon Museum at Dresden, with pedestal, gilt ground.

Vase, with paintings after Miéris and Terburg, in the Royal Saxon Gallery at Dresden, with pedestal, gilt ground.

Schinkel-vase, with handles of bronze, and a painting representing Harvest, after Von Klöber.

Vase, with serpent-like handles, representing dancing figures, after a sketch by Professor Von Klöber, and gilt.

Persian vase, representing a South American forest, after Bollermann.

Fruit-bowls, painted after nature, with flowers and figures.

Chandeliers of a green mass, with biscuit-figures upon a bronze socket, and pedestal of gypsum, with nineteen bronze candlesticks, and bronze lustres.

Tureen, dishes, plates, and dessert plates, decorated with reliefs.

Oval tureen, dish, plates, and dessert plates, decorated with field flowers.

Punch-bowl, with the painting of a drinking company, after Hogarth.

Bowl, imitation of Majolika, after the antique.

Painted dessert plates.

Flower vessel, after Watteau, with gilt pedestal.

Déjeûner of various pieces, and views upon the Rhine.

Octagonal déjeûner, of eight pieces, in lapis lazuli ground.

Square plates, with grapes, hunters, Venus, and with flowers, in a wooden frame.

Biscuit-figures—"the Thorn drawn out;" Ganymede.

Busts of the King and Queen of Prussia.

Figures—"Venus kneeling."

Lithophanies.

[When Frederick the Great occupied Dresden in the seven years' war, he saw the advantage of the porcelain manufacture, and transported a number of the best male and female manufacturers into Prussia, and hence originated the celebrated porcelain works of this country.—R. H.]

The accompanying Plates, 109 and 105, represent several of these objects.

214 **Actien Verein Share Company**, *Wilhelmshütte, near Sprottau*—Manufacturer.

An assortment of enamelled stone-ware.

215 **Altmann, J. G.**, *Bunzlau*—Manufacturer.

Porcelain coffee and tea pots, butter plates, preserve pots, beer glass, and water can.

Specimens of earthenware.

Coffee-pot capable of containing 200 cups.

216 **Frankenberg-Ludwigsdorf, Count of**, *Tillowitz, near Oppeln*—Manufacturer and Proprietor.

Earthenware console, silvered. Fruit baskets. Earthenware vases, silvered and gilt.

217 **Mattschas, J. G. H. (Widow), & Son**, *Frankfort on the Oder*—Manufacturers.

An assortment of crockery and earthenware, comprising consoles, lamps, vases, plateaux, fruit shells, &c., the material of which is the clay of the vicinity of Frankfort.

218 **Paetsch & Hintze**, *Frankfort on the Oder*—Manufacturers.

An assortment of white earthenware goods, of various quality and form (the material used is from this country), consisting of butter plates (round and oval), butter tubs, salad bowls, dishes, preserve dishes, cabarets, plates (conical and common), butter and fruit plates, coffee and tea pots, cups, sugar boxes, tureens, sauce-boats, salt-cellars, portable dinner service, knife rests, candlesticks, basins, flowerpots, &c.

219 **Tielsch, Carl, & Co.**, *Altwasser, Silesia*—Manufacturers.

Extensive assortment of painted and white porcelain (china), containing cups and saucers, inkstands, plates, dishes, punchbowls, vases for flowers, painted vases, water-jugs, writing stand, sets of tea, coffee, toilet, and luncheon services, &c.

These articles are made of the purest porcelain clay, and are remarkable for their clear white and shining glaze. This china is known in all Germany, and is exported to Sweden, Denmark, Norway, and North and South America.

220 **Forester, Friedrich**, *Greenberg, Silesia*—Manufacturer.

Woollen cloth, Spanish stripes, for the China market.

Ladies' cloth, lilac.

Royal or three-quarters and black fine cloth, for the North American and China markets.

Fine satin cloth.

Various samples of woollen yarn.

222 **Bonge, Augustus Louis**, *Potsdam*—Manufacturer.

A number of statuettes, figures and consoles, in stone and wood, carved, bronzed, and gilt.

223 **Bauer, Reinhold**, *Schwerin on the Warthe*—Inventor and Manufacturer.

Flower-table, with a bird-cage of oak wood, in the Gothic style.

224 **Baumann, Louise**, *Berlin*—Inventor.

Fire-screen, with plush embroidery.

225 **Zeisig, Heinrich**, *Breslau*—Manufacturer.

Bell-ropes of coloured silk, silk and gold, silk and silver.

226 **Gropius, P.**, *Berlin*—Manufacturer. (Agents, Mr. W. F. Sachse, 36 Trinity Square, Borough, and Messrs. Kingsford & Lay, London.)

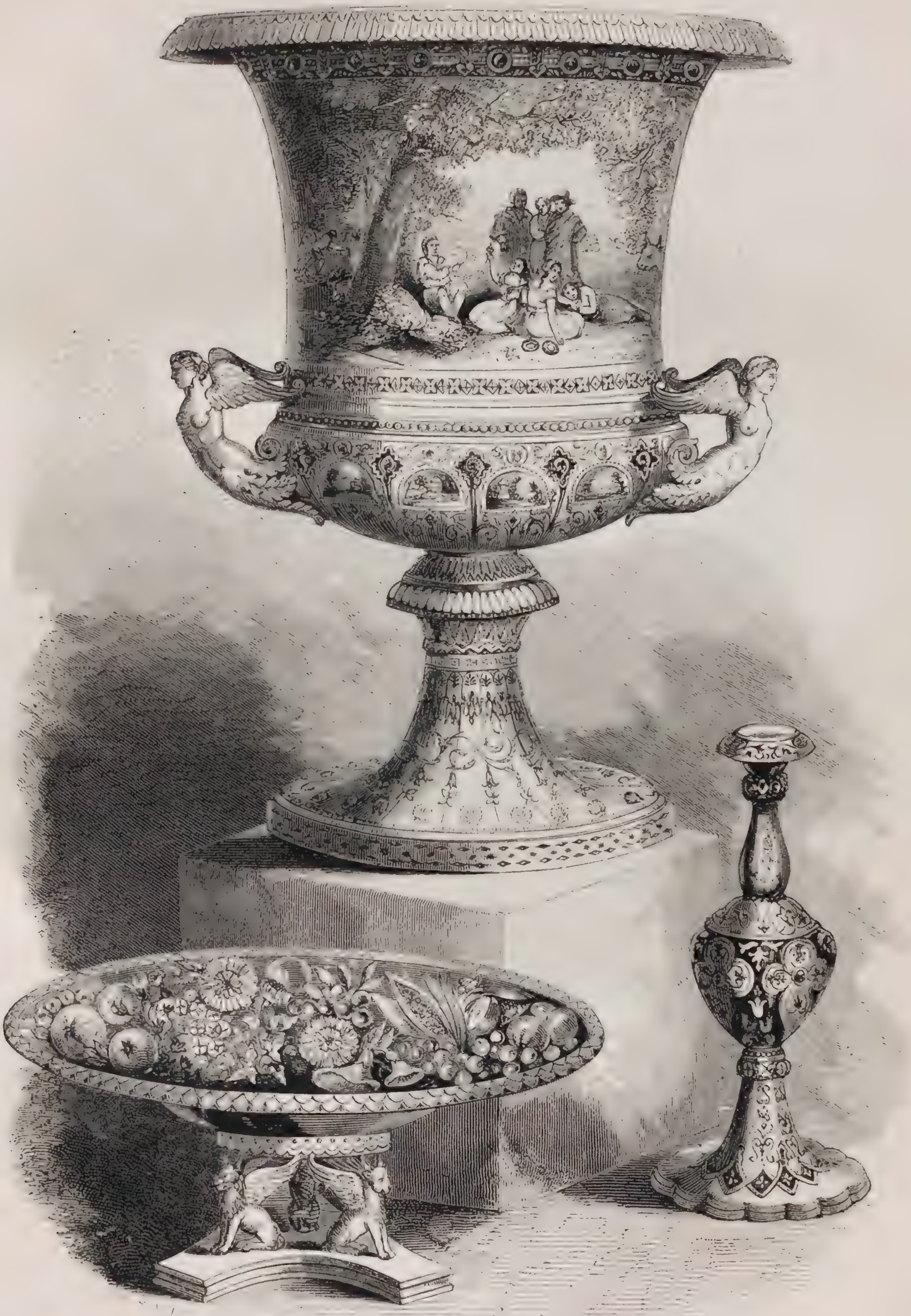
A variety of statuettes with suitable brackets, and other articles of papier-maché.

Tableau, representing a wall-side ornamented by figures, upon consoles, looking-glass frames with plate-glasses, medallions, and sundry other articles in carton-pierre.

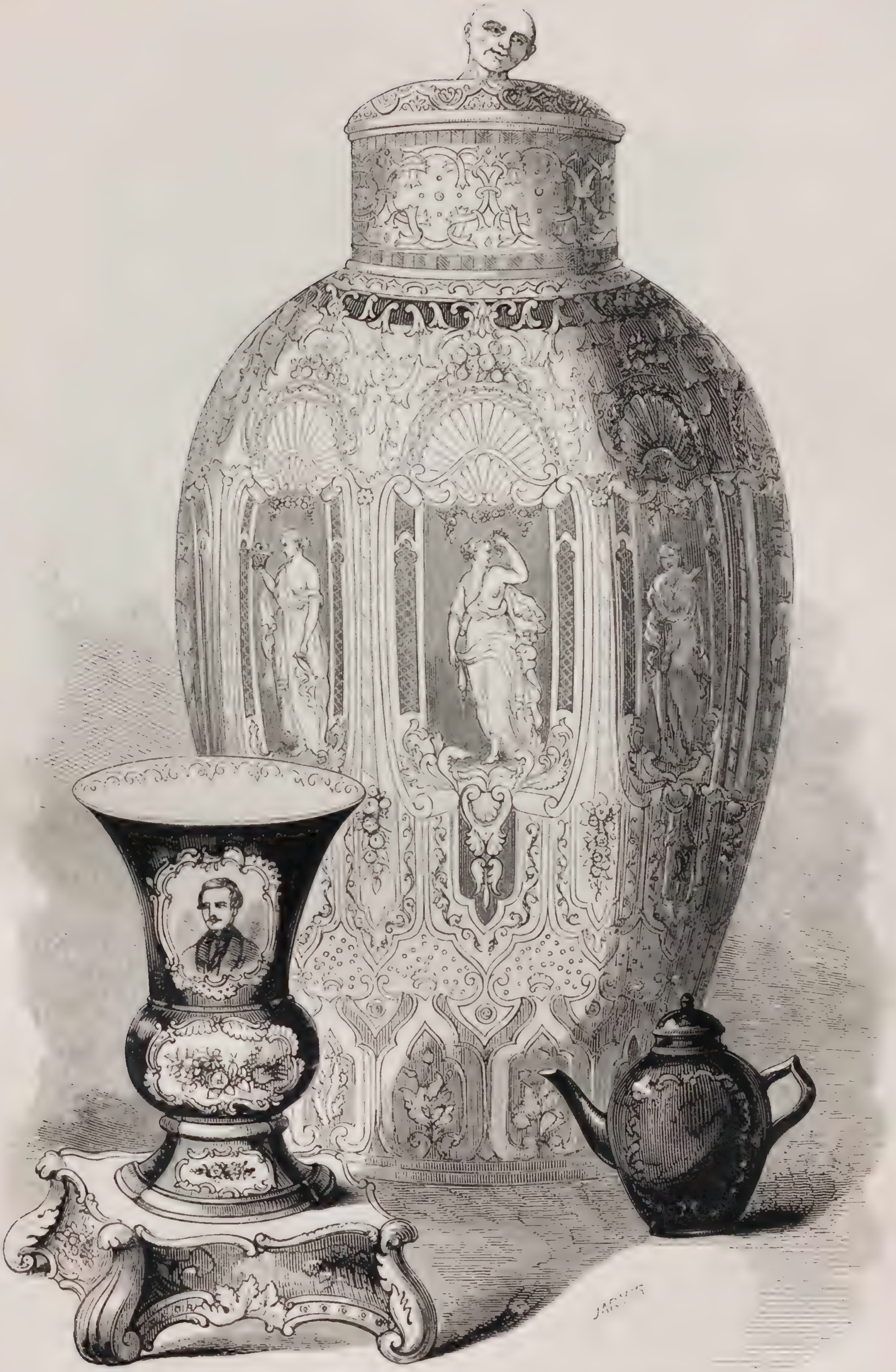
Small table of carton-pierre, with marble plate.

227 **Müller, Ferdinand Ludwig**, *Berlin*—Manufacturer.

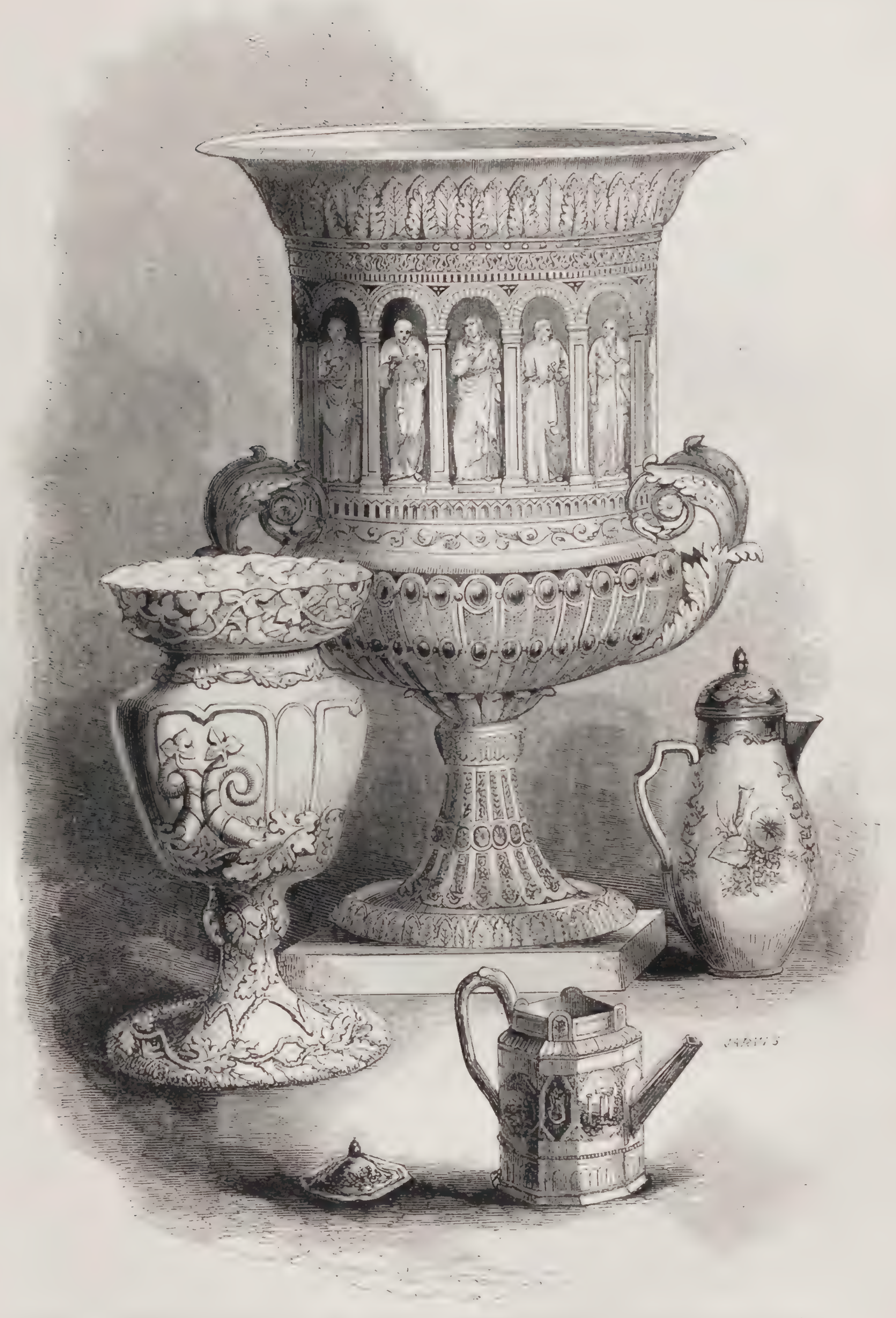
Specimens of gilt frames, which have lasted seven years, and which were (with the exception of four corner pieces) gilt by a process that secures durability.



109. VASE AND EPERGNE IN PORCELAIN. BERLIN.



105. SPECIMENS OF PORCELAIN. BERLIN.



211. SPECIMENS OF PORCELAIN, FROM THE ROYAL PRUSSIAN PORCELAIN MANUFACTORY, BERLIN.

228 Stab, G. C., sen., *Berlin*—Manufacturer.

Toilet-table of crown morocco leather and red velvet, surrounded by a pierced gallery. Exhibited on account of its superior workmanship.

A collection of fancy leather articles. Exhibited on account of cheapness and solidity of workmanship.

229 Richt, George, *Berlin*—Manufacturer.

Plate cabinet, of rosewood (*bois de palisandre*), carved; an *étagère* cabinet, of the same material, carved.

These two pieces of furniture are exhibited on account of their workmanship and the beauty of the wood.

230 Elsholtz, Friedr., *Berlin*—Manufacturer.

Slabs of inlaid flooring, each of two portions put together, each portion the size of four square feet.

231 Alberti Brothers, *Waldenburg, Silesia*—Proprietors.

Samples of platilles royales, as exported to Mexico and the West Indies.

232 Becker, F. C., *Berlin*—Manufacturer.

Easy chair, with mechanism, and a reading desk attached.

233 Below, F., *Berlin*—Manufacturer.

Pattern-cards of papier maché gilt cornices, for picture-frames.

234 Bengen, D., *Berlin*—Manufacturer.

Painted window-blinds, representing flowers, and landscapes, coloured, and in sepia.

235 Cantian, C., *Berlin*—Inventor.

A granite column, with pedestal: the base of Silesian marble, the capital of Carrara marble. A large table-plate of rosso antico corallino marble. Circular table-plate of red granite.

Grand vase, with column-like pedestal, supported by a bronze vase; diameter 2 feet 9 inches, height 3 feet 6 inches. The granite from the vicinity of Oderberg.

[The material employed by this exhibitor is well worthy of attention. The column or pedestal is of a garnet rock, singularly studded with crystals of that mineral, many of them very fine and almost transparent. The inclosing rock is a gneiss. The red marble and porphyry are also beautiful, and the latter of very considerable hardness. The material is well and carefully worked.—D. T. A.]

236 Kuettner, C. A., *Wolgast*—Manufacturer.

Linen press, or sideboard with arched panels, and highly polished.

237 Schievelbein, J. F. E., *Berlin*—Manufacturer.

Octagonal table, executed in wood mosaic, the material consisting of rare Indian woods. Samples of the wood, in an unfinished state. Easy chair capable of being taken asunder.

238 Sommerfeld & Huebner, *Potsdam*—Manufacturer.

Two round temple mahogany tables.

239 Wamp, Charles, & Schroeder, *Berlin*—Manufacturers. (Agent, H. Kayser, 28 Basinghall Street).

Window blinds, representing pictures and landscapes.

240 March, E., *Thiergartenfelde, near Charlottenburg*—Manufacturer.

A fountain, with pedestal, group of children, bowl, and triton.

This fountain is represented in the cut in the following page.

Large gothic vase and pedestal.

This vase is represented in the cut in the following page.

Two Italian vases.

Four figures of soldiers, at Berlin, with consoles.

Mosaic plates.

Chemical apparatus.

The fountain, the vases, the soldiers, and their consoles, are manufactured out of dust taken from the highways.

241 Ungerer, Conrad, *Hirschberg*—Manufacturer.

Porcelain water-pipes, manufactured from a mixture of clay, &c., without metals.

242 Engeler & Son, H. M., *Berlin*—Manufacturers.

An assortment of brushes of every kind and description. A plate with the royal Prussian arms, &c., formed of hair in the manner of brushwork. It contains about 80,000 holes. A large hair-brush. The manner of putting in the bristles is new.

243 Kersten, Albert, *Berlin*—Manufacturer.

Papier maché frames for daguerreotype pictures.

Sundry articles, as pocket-books, cigar-cases, &c., used as frames for daguerreotype pictures.

244 D'Heureuse, C., *Berlin*—Manufacturer.

Straw bonnets, of Brussels, Swiss, and Saxon straw.

Chip bonnet, of Italian chip.

Leghorn bonnet of 11 blades.

Table covers of 11 blades.

Italian straw, embroidered with straw and Manilla hemp, representing the Prussian and Bavarian arms.

245 Dreusike, W., *Neu Ruppin*—Manufacturer.

Writing-table of oak in the Gothic style, to enable gentlemen to write sitting or standing, with an iron fire-proof safe and a clock.

Ladies' casket, in rosewood. Work-table, in mahogany, with quilted foot-stool attached.

246 Koerner, Moritz, *Schönau in Lower Silesia*—Manufacturer.

Waste-paper basket, of artificial brilliants, the mass of which is a composition of tin, lead, and bismuth, and consists of many thousand separate parts which are soldered together and fastened upon wire rings. The two plates, with a view of Schönau, are of the same composition; the mould used was not of steel or stone, as in the case of the other pieces of the basket, but very strong glass.

247 Mess, Leopold, & Co., *Brandenburg on the Havel*—Manufacturers.

Sample-card of gilt wooden cornices made by steam.

248 Gebhardt, Charles Augustus, *Berlin*—Producer.

Portfolios, in morocco and velvet, stamped in relief and in gold, various sizes, with locks.

Albums, in morocco and velvet, stamped in gold, various.

An assortment of pocket-books, cigar-cases, porte-monnaies, stamped in relief and in gold.

The arabesques and medallions adorning these articles are stamped upon the surface of the leather or velvet by a peculiar process.

249 Moniac, Edward, *Berlin*—Manufacturer.

Samples of decorations made from embossed paper.

Separate standing flowers. "New-year's wishes."

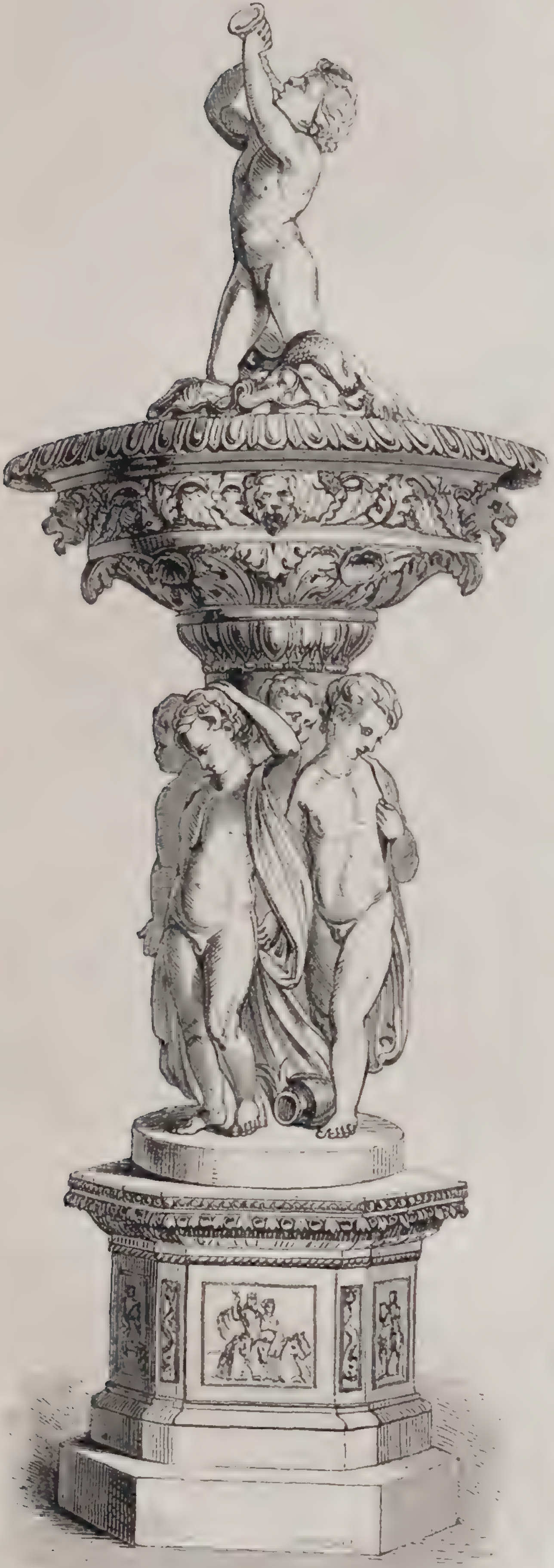
Ball decorations. Sweet-cake covers.

Gold-paper pressed objects.

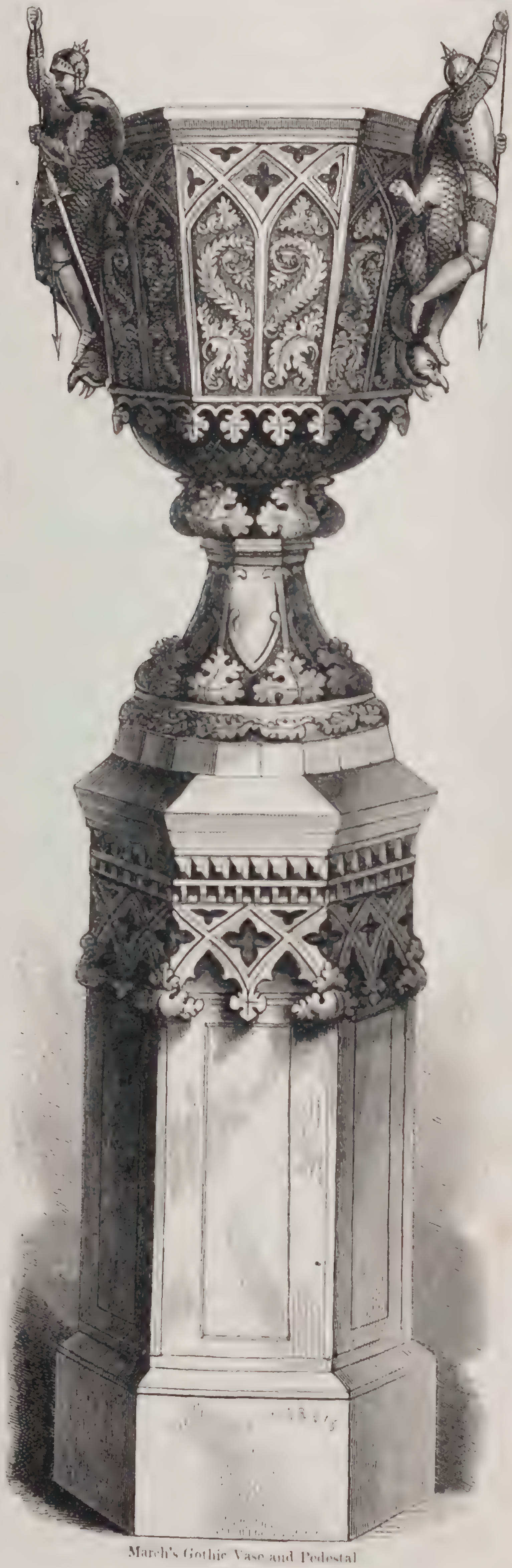
Sundry objects for the cotillon dance.

Sundry pasteboard articles.

Wreaths, &c., composed of artificial paper flowers.



March's Fountain in Terra-cotta.



March's Gothic Vase and Pedestal.

250 Wunder, Louis, *Liegnitz*—Manufacturer, Inventor, and Proprietor.

Sample of best tallow house-soap.
Best palm-oil house-soap.
Samples of ananas soap.
Pine-apple soap, invented by the exhibitor.

251 Mossner, A., *Berlin*—Manufacturer.

Purses, cigar-boxes, pocket-books, ladies' boxes, letter portfolios, &c.

252 Gerlach, Chr. Fr., *Naumburg on the Saal*—Manufacturer. (Agent, A. Heinzmann, 17 Ironmonger Lane, Cheapside.)

Paper boxes with tin-toys.

253 Ringelhann, *Hirschberg, Silesia*—Manufacturer.

Stuffed colt, without a seam. Stuffed goat.

254 Dehmel, Henry, *Quaritz, Province of Lower Silesia*—Manufacturer.

Specimens of soaps of various scents, colours, and designs.

255 Sarre, H., Jun., *Berlin*—Manufacturer.

Green soap, with natural grain.
White grain soap (Elaine soap).
Palm-oil soda soap. Tallow soap.

256 Bahn, A. E., *Berlin*—Manufacturer.

Toys and dolls of various kinds.

257 Wigdor, M., *Berlin*—Manufacturer.

Patterns of umbrella and parasol sticks in bone and wood, made on the lathe.

258 Tzitschke, J. T., *Sorau*—Manufacturer.

An assortment of mother-of-pearl, cocoa-nut, shell, and horn buttons.

259 Zeschke, Louis, *Müllrose, near Frankfort on the Oder*—Manufacturer.

Hunting and shooting bags, of deer and calf-skin and morocco leather. Hare and wildfowl waterproof bags. Large net bags.

260 Krebs, William, *Berlin*—Manufacturer.

A large assortment of purses, cigar and fusee-boxes, pocket-books for bills of exchange, spectacle-cases, ladies' boxes, card-cases, letter portfolios, and purses.

261 Krumteich, L., *Schwiebus*—Manufacturer.

White wax baskets, with painted and gilt decorations. Coloured wax octagonal basket. Oval and pyramidal decorated wax tapers.

262 Motard, A., & Co., *Berlin*—Manufacturers.

Samples of stearine from tallow prepared by lime, sulphuric acid, cold and hot pressing. Candles manufactured of the same.

Stearine from tallow prepared by sulphuric acid and distillation, without pressure. Two samples of stearine, from tallow prepared by sulphuric acid, warm and cold pressure. Candles manufactured from the same.

Stearine from palm-oil, prepared by sulphuric acid without pressure. Candles manufactured from the same, and with an exterior coat of stearine.

Stearine from palm-oil, prepared with sulphuric acid and distillation, warm pressure. Candles manufactured from the same.

263 Palis, A., *Berlin*—Manufacturer.

Tallow oil-soap and palm-soap. Tallow for candles and for soap. The tallow used in these articles is of Prussian production; the palm-oil imported from Liverpool.

264 Schmerbauch, H., *Berlin*—Manufacturer.

A variety of cigar-cases, portfolios, embroidered, card-holders, purses, pocket for keys, of straw and leather and silk in combination.

265 Soehlke, G., *Berlin*—Manufacturer.

Toys, "an English regiment on parade in presence of Her Majesty Queen Victoria and of her royal suite," formed of painted pewter figures.

Patterns of pewter articles, candlesticks, &c., white and gilded by galvanism.

266 Fechner, F., *Guben*—Manufacturer.

Gilt and ornamental borders. Artificial flowers and leaves. Gilt silvered, and coloured paper.

Articles used by bookbinders, leatherworkers, confectioners, and perfume-makers.

Articles composed of artificial leaves, flowers, &c.

267 Geiss, M., *Berlin*—Manufacturer.

Statues cast in zinc:—"Hebe," after Canova; "Eve," after Bailey; "Boy with a swan," after Kalide. This figure is represented in the cut on the following page. "Two stags," after Rauch; "Kneeling Niobe," after the antique, cast in zinc.

Capitals and columns; tiles—cast in zinc.

[The costliness of bronze renders its employment as a material applicable to the purposes of monumental statuary almost exclusively. On this account the extension of sculpture, with the increase in the number of private collections, has been seriously impeded. This impediment, however, is now being rapidly removed by the advances that have been made in the art of zinc-casting. The working on this metal as a medium for high art had at first to make good its progress against many prejudices, chiefly on the part of artists themselves. In this lay the cause which long retarded its employment in connexion with sculpture, whereas, in domestic architecture, its application during the last eighteen years has superseded that of almost every other material.

Every doubt has now been dispelled as to the comparative durability of zinc in the open air, and under the influence of every variety of weather. Chemistry has demonstrated this property of the metal.

Zinc is readily melted, liquifies very completely, and, therefore, is better adapted to cover the smallest lines in the mould than metals of a harder and more compact texture. The zinc casting is so pure and so finished on being turned out of the mould that the work requires but very little subsequent chasing. This circumstance, combined with the cheapness of the metal itself (the cost of a zinc cast being to a cast in bronze only one-sixth or one-eighth), renders zinc an admirable material for statuary. But the unfavourable colour of the zinc proved, for a long time, a great obstacle in the way of its application to these purposes.

This difficulty, however, through the indefatigable exertions of the present exhibitor, the founder of this important branch of art in Berlin, has been completely overcome. He has succeeded in imparting to the zinc a metallic surface, which gives to the cast the perfect aspect of Florentine bronze.

The colossal group of "The Amazon," after Kiss of Berlin, cast in zinc and bronzed by M. Geiss, presents a striking specimen of the perfection to which the latter has brought his peculiar invention.

The model of this group, cast in zinc by Geiss of Berlin, and now deposited in the Great Exhibition, will

Boy and Swan, after Kalide.

establish the superiority of zinc over any other metal for similar purposes, so far as the elements of cheapness and solidity combined are concerned.]

268 **Bergmann, Louis**, *Warmbrunn, Province of Silesia*—Inventor.

A landscape and several figures of animals, in a very diminutive size, cut out of bone.

269 **Daehns, Adolph**, *Berlin*—Inventor.

Wreath of flowers, carved out of a solid piece of oak, with a foot of the same material, applicable as a frame for a painting or looking glass.

270 **Alberty, J.**, *Berlin*—Inventor.

Frame, carved in wood and gilt, after a drawing by Stüler, made for the painting of Lo Spasimo, in the Chapel Royal at Berlin; the property of H. M. the King of Prussia.

Madonna, carved out of lime tree; the property of H. M. the King of Prussia.

Relievo, carved in pear-tree wood, representing Silenus inebriated, after the antique; suitable for a door to a cellaret.

271 **Royal Prussian Iron Foundry Office**, *Berlin.*

Group of figures in cast-iron, representing two Amazons, one of whom is on horseback, in a silver-mounted and decorated case.

Group of figures, representing two warriors, one of whom is on horseback, with a similar case.

The Warwick vase, 2 feet 6 inches in diameter, with gilt inside.

The Athenian vase, with figures and handles, and gilt inside; 2 feet in diameter, and 3 feet high.

This vase is represented in the cut in the next page.

The Alexander vase, 3 feet 4 inches in diameter, and 2 feet 8 inches high; the border is decorated with reliefs after Thorwaldsen, representing Alexander's entry into Babylon. Mounted with silver, and gilt inside.

[The fine iron castings executed at Berlin, and at some of the other Royal Foundries in Prussia, have long been known as equally delicate and perfect. They are sometimes of such small dimensions and of such complicated forms that a very unusual degree of fluidity of the metal must have been necessary, and it is generally imagined that a small admixture with other substances, as phosphorus, has assisted in producing this result. The process must even now be regarded as somewhat secret, although no doubt the nature and purity of the iron, and the absence of impure sulphury coal in smelting, have great effect in thus ensuring a free, fluid, and not too brittle metal. The minuteness of detail in such works is not the least remarkable part of the subject.—D. T. A.]

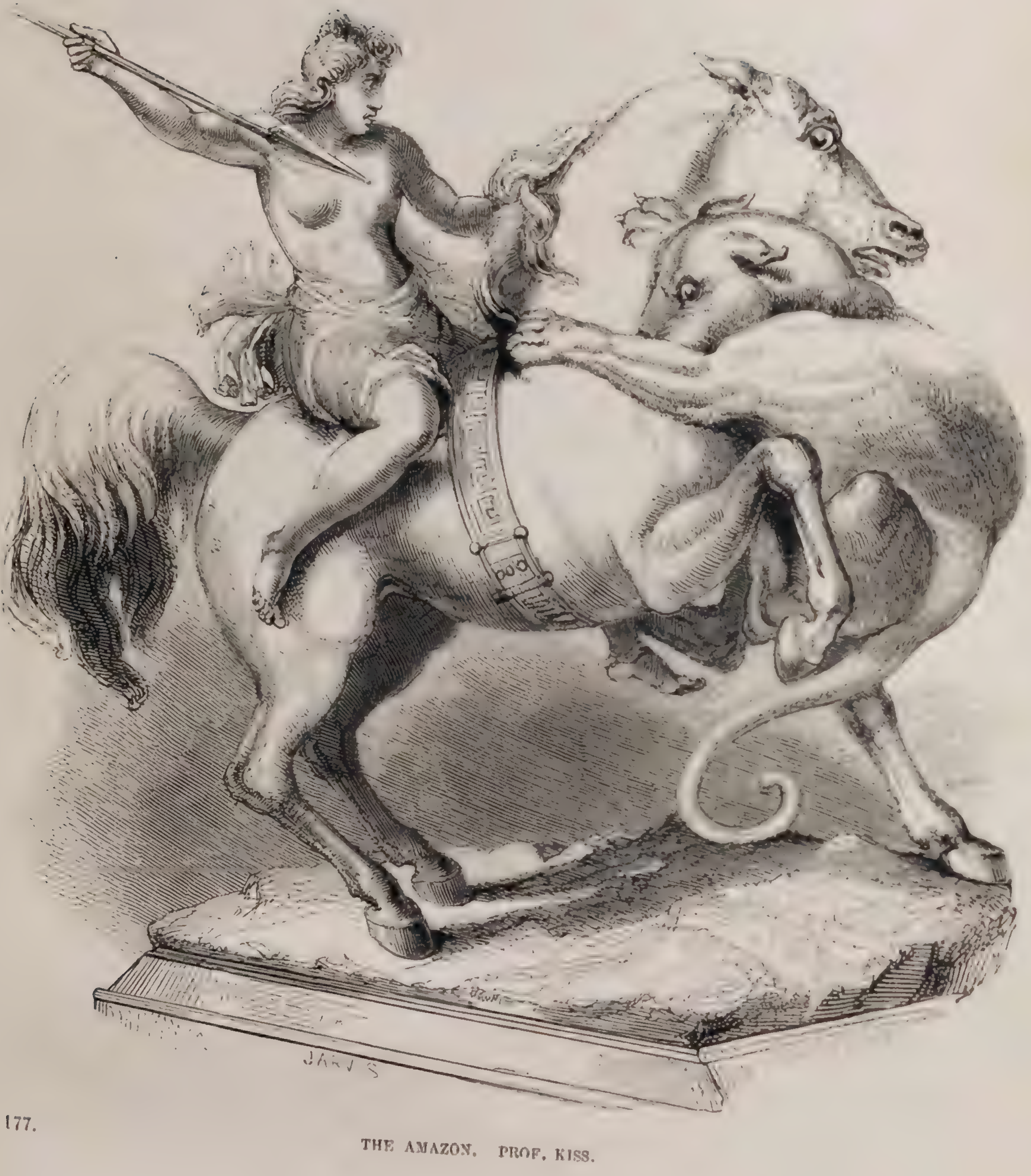
272 **Eichler, G.**, *Berlin*—Inventor. (Agents in London, Williams & Norgate, Booksellers, 14 Henrietta Street, Covent Garden.)

Bas-reliefs in plaster of Paris, after Thorwaldsen—Bacchus and Amor; Christ blessing the children; Mary with the Child and John.

Several plaster of Paris casts of antique and modern gems.

Tableaux with 52 portraits and medallions, cast in plaster of Paris, after sculptures of German artists of the 16th century.

Tableaux with medallions of various sizes, framed; all casts in plaster of Paris.



177.

THE AMAZON. PROF. KISS.

Athenian Vase.

273 DRAKE, PROFESSOR F., *Berlin*—Inventor.

Alto-relievo in plaster of Paris.

Cast of a part of the pedestal of the marble monument of Frederic William III. of Prussia, erected at Berlin. The monument is double the size of the model, representing emblems of garden pleasures—a mother listening to the rippling of the brook; girls with flowers; feeding the swan; children at a bird's nest, &c.

Boy reclining, in marble, original.

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274 ENGEL, F., *Berlin*—Inventor.

Model of an ellipsoid, with its curves and centre cut.

Model of Fresnel's undulating plane.

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275 MÖHRING, FR. L., *Berlin*—Inventor. (Agent in London, B. Hebeler, Esq. Prussian Consul-General.)

Bust raised by electro-galvanism.

Alto-relievo and table ornament, after Tieck, in two colours, galvanically silvered and gilt.

Dish, to correspond.

Dish raised by electro-galvanism.

Wash-hand basin and water-cup in similar styles.

Baskets galvanically silvered over.

Large and small vine leaves in two colours.

Flower vases, and a sconce in a similar style.

276 LIEDEL, C. J., *Warmbrunn*—Inventor.

Artificial compositions of moss and paper, representing Warmbrunn in Silesia, Kösen near Naumberg, the lead chambers at Venice, the Rochelfall, a mill on the hills. Chiefly made by the exhibitor.

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277 KRUSE, C. B., *Stettin*—Inventor.

Cork models, executed by the exhibitor:—

A ruin. The church at Kobern on the Moselle. The Nun-hill and the fortress at Salzburg. The gate at Basle. View of the chateau de Meillan en Berri. View of the chateau de Josselin en Bretagne. Castle of Rheinstein on the Rhine. Castle Langenau on the Lahn. Ruin of the church de Seps Douluers at Jerusalem. Ruin of the gate at Damascus. Castle of Babertsberg near Potsdam. Castle of Rhineck. Two French ruins.

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278 KRAUSE, MARTIN, *Berlin*—Inventor.

Casts of the Twelve Apostles, which were carved in onyx, and fixed in the shield, presented by the King of Prussia to the Prince of Wales.

Bracelet of various pastes, with casts after gems in the Royal Prussian Collection, enchased in gold.

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279 KISS, Professor A., *Berlin.*

Group, in zinc and bronze, representing an Amazon on horseback attacked by a tiger—after one cast in bronze in 1839, by a number of amateurs, and presented to the King of Prussia, and which was placed by his Majesty's commands in front of the Royal Museum, Berlin—designed by the exhibitor, cast in zinc and bronzed over by M. Geiss, Berlin, in his peculiar manner.

Group in bronze, as above, on a small scale.

This group is represented in the Plate 75.

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280 DEVARANNE, S. P., & SON, *Berlin*—Inventors.

Zinc casts:—
Lion. Panther.
Venus. Boy with a squirrel.
Stag's head, lion's head, and Paris's head.
Console. Pin. Knob.
Rosettes. Wreath of laurels. Square ornament.
Trellises, with beards.
Various pieces of ornaments.
Assortment of fine cast-steel. Jewellery.

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281 FISCHER, KARL, *Berlin*—Inventor.

Portrait of Her Majesty the Empress of Russia, cameo in onyx.

Various medals in bronze, in frames.

Phrixus and Helle; relievo in ivory—original composition.

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282 WINKELMANN, JULIUS, *Berlin*—Inventor.

Statue of Frederic II., Elector of Brandenburg, produced by electrotype process.

Silvered and gilt tea-trays; snuffer-trays; vine-bearer; large antique bowl; reliefs; plates; caster-stand; chandeliers; large wine-cup; glass trays; cups; decanter-stands; fruit-bowls; candlesticks; candelabras; chandeliers; napkin-rings; bread-baskets; spoon-basket, &c., all produced by the same process.

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283 FRANZ, JULIUS, *Berlin*—Inventor.

Bronze figure of a shepherd attacked by a leopard, in plaster of Paris.

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284 HAENEL, EDWARD, *Berlin.*
(London Agent, Mr. M. Kronheim, 32 Paternoster Row.)

Frames and boxes, containing 500 different impressions of certificates, bank-notes, and labels of every description, upon pasteboard, in black, colours, and gold.

Specimens of type.

Casts of brass types for bookbinders and gilders, and electro-typed matrices for casting large types, galvanic copies of wood-cuts, &c.

285 Kalide, T., *Berlin*—Inventor.

Group: the Bacchante with the Panther, in plaster of Paris from the original in marble.

A boy with a swan, in bronze, for a fountain in the royal castle at Charlottenburg, the property of H.M. the King of Prussia.

286 Pfeuffer, C., *Berlin*—Inventor.

Various medals, in white and bronze metal: Antigone and Sophocles; the Arsenal at Berlin; Frederic William IV., King of Prussia; the Bishop of Munster; Vulcan and Minerva, &c.

287 Müller, —, *Berlin*—Inventor.

Ornamental castings in bronze:

The Prince of Prussia on horseback.

Prince Albert of Prussia on horseback.

A broken spider-web.

These articles are unique, as the models did not admit of multiplication. The first two were finished in one casting, the others required two castings.

288 Sondermann, —, Artist of the Royal Academy, *Berlin*—Inventor.

Stag's head, of plaster of Paris, saturated with wax and varnish, with natural horns and a garland of oak leaves, in papier maché.

Buck's head, of papier maché.

289 Friebel, Louis, *Berlin*—Sculptor.

Newfoundland dog in bronze, after the model of Moëller. The whole of the figure, inclusive of the base, was cast in one piece, and the mass has not been retouched by the chisel, the seams only having been removed.

Bronze figure, with pedestal representing Hope; after the model of Rauch, cast and chiselled by the artist.

290 Heymann, Charles, *Berlin*—Proprietor.

Architectural work, with 48 plates. Architectural details, with 120 plates. Collections for frontispieces, and grand plans for town houses, with 15 plates. Topographic map of the country round Berlin and Potsdam. Exhibited as specimens of the state of lithography in Berlin.

291 Seeling, G. W., *Berlin*—Inventor.

Front of the Royal Arsenal, Berlin, celebrated as one of the finest buildings of Germany. It was employed in 1844 as the emporium of the great German Exhibition. The principal material is paper; the moulds for the bas-reliefs and cornices cut in steel and brass by the medal engraver Fischer.

292 Moeller, C., *Berlin*—Inventor.

Bronze groups: Boy with a Newfoundland dog; Girl with a bull-dog.

293 Franz, Julius, *Berlin*—Inventor.

Bronze figure, representing Victory standing upon a rock, throwing a wreath to the conqueror, after the original of Rauch, reduced to 22 inches in height.

Bronze figure: Victory, writing down in the book of history the names of those victors whom she has crowned.

294 Fadderjahn, Bernhard, *Berlin*—Inventor.

Plaster of Paris casts from moulds used in the manufacture of ornamental paper and of embossed silver. Bronze cast of a Gothic bas-relief, in commemoration of the union of the German Princes for the completion of the cathedral at Cologne, after a drawing by Professor Hoffstadt of Munich.

295 Bianconi, F., *Berlin*—Inventor.

Marble bust; Shepherd, after Thorwaldsen; statues in marble—Paris, after Canova; Venus, after Thorwaldsen.

296 Fischer, C. H., *Berlin*—Inventor.

Figures in bronze: Eagle; Girl praying; a Danaide.

[Sculpture in the Zollverein, as well as in the Northern States of Germany, is represented principally by the schools of Berlin and of Munich. The latter, founded by Schwanthaler, had already produced a great many works, under the co-operation of Stieglmeyer, long since. The former, always adopting the pure Greek style, has not rivalled the latter in the number of its creations, but all that it has produced is of high design and execution.

In Berlin, sculpture is indebted for the high character of classic perfection which it has acquired to the co-operation of three men, well known in the history of art. They are Rauch, Tieck, and Schinkel. These have been the founders of the School of Berlin. Their constant struggle to reach the pure Greek ideal image excluded from their creations every foreign element. Schinkel invariably followed in the same track in all his works in connection with sculpture. The young artists formed in this school strictly adhered to the principles inculcated by its first teachers, and, in common with their great living masters, one of whom is Rauch, observe with zealous earnestness and success the course that has been indicated to them, by a clear understanding and a vivid perception of the real beauty and noble sentiment of art.]

297 Dietrich, Friedrich, *Berlin*—Inventor.

Two heads of children at play, in Carrara marble, designed and executed by the exhibitor.

298 Frueh, Gustav., *Berlin*—Inventor.

"The Butterfly-catcher," cast in bronze.

299 Kesseler, Carl, *Greifswald*.

Bronze full-length statue of the muse Polyhymnia, after the antique statue in the Royal Museum, Berlin.

300 Konarzewski, Albert, *Berlin*—Proprietor.

A bronze group representing a child with a group of storks, modelled by Albert Wolff, sculptor and member of the senate of the Academy of Fine Arts at Berlin, and chased by the exhibitor.

301 Mansis, H., *Berlin*—Inventor.

Collection of models for gilders, in a composition of sulphur.

302 Runge, Dr., F. F., *Oranienburg*—Inventor.

Portfolio, with sheets of paintings, and a volume with the same.

The paintings produced by chemical action; the process is applicable to the purposes of painters, designers, and calico printers. A new invention.

303 Schropp, Simon, & Co., *Berlin*—Publishers.

Three portfolios, containing copperplate printed maps. Lithographic printed and coloured maps. Geological maps. Map of the moon. Engraved, or drawn on stone, by the most eminent artists of Berlin.

304 Stetter, Carl Gustav., *Breslau*—Proprietor.

Model of an ancient Greek theatre without the pillars and the rock, in strong cardboard, made by Gläzer at Breslau.

305 Sussmann, Louis, *Berlin*—Inventor.

Model of the obelisk of Luxor, at present on the Place de la Concorde, at Paris; precipitated by electrotype process in copper, and gilt. The electrotypic art has here been employed to exhibit the plaster of Paris model with accuracy: this is difficult to attain in the ordinary process of casting, from the shrinking of both the mould and the metal.

[The plaster of Paris mould is either carefully covered with plumbago, bronze powder, or it is gilded prior to being electrotyped.—R. H.]

306 WINKELMANN & SONS, *Berlin*—Inventors.

Portfolio-book, containing specimens of a great number of architectural, landscape, and other lithographic prints; coloured and executed by the exhibitors. Exhibited as specimens of the state of lithographic art in Berlin.

307 WOLFF, ALBERT, *Berlin*—Designer.

Marble statue—Girl with a Lamb, representing Innocence.

308 ZEBGER, F. W., *Berlin*—Painter.

Ten panes of painted glass. Glass paintings representing the Empress Edith, St. Christopher, and St. John.

309 BERNHARD, AFINGER J., *Berlin*—Inventor and Manufacturer.

Bronze portraits:—Prince of Prussia, Princess of Weimar, General Von Wrangel, and Professor Rauch.

Bronze statuette:—Virgin and Infant, in mediæval style.

Both invented and executed in bronze by the exhibitor, and chiselled by Mr. Mertens, the artist of the "Shield of Faith" (presented by the King of Prussia to the Prince of Wales).

310 BLAESER, GUSTAVUS, *Berlin*—Inventor and Modeller.

Statue of Louis van Beethoven upon a pedestal, in bronze; with corner figures, representing the Spirits of Chivalry, Religion, Sadness, and Joy.

Statue of Her Majesty the Empress of Russia riding on horseback, in bronze. The chasings by Albert Konarzewski, academical artist.

310A SIEMENS & HALSKE, *Berlin*—Proprietors and Patentees.

Electric telegraphs. These telegraphs are used on all Prussian Government lines, and on most of the railway lines of Northern Germany, making a total of about 3,000 miles; besides extensive lines which at present are in course of construction in Russia and other countries.

1. Indicating telegraphs.—Keys are arranged round a dial, each key bearing a letter of the alphabet. One line-wire is used which connects two or more instruments at different stations. A hand on each dial revolves in concert with the hands on the remaining instruments; but by pressing down a key on any of them, all the hands stop, pointing to the same letter, until the key is again released. These instruments differ essentially from other telegraphs, inasmuch as they are entirely electrical machines, which break and reclose their own contacts in a similar manner as a steam-engine works its slide.

The electric current is passing through the line wire, and the coils in each instrument cause the armatures to be attracted by its motion to break the circuit. The armatures are then quite at liberty to fall back, and in so doing, each instrument re-establishes the circuit, and the succeeding stroke takes place. In pressing down a key, the armature is stopped from falling back, and consequently no current can pass through the line-wire until it is released. The motion of the armature is transferred to a notched wheel, the spindle of which carries the hand on the dial. In the same case with each telegraph, is an alarum, which is also worked by the electric circuit, only at the time when the commutator arm is placed in the position of "rest," and that of another station is moved on "telegraph." The alarum continues to sound until the arm of the telegraph, which is to receive a message, is also placed on telegraph, when the instruments begin to work, making about 35 revolutions, or 1,050 double strokes of the armature per minute.

Printing telegraphs are also worked by the electric current only, without the aid of clockwork. Their arrangement is similar to that of the indicating telegraph. In place of the hand on the dial there is a type-wheel with 30 springs, each carrying a type; it stops with the hand of the indicating telegraph, at which moment a hammer placed below the wheel, strikes against it, and prints the letter on a strip of paper, which passes over a blackened roller, turning round with it so as always to offer new surfaces to the hammer. The hammer is worked by a magnet, which is excited by the same battery which works the type-wheel: its current is continually broken and restored by the movements of the armature of the type-wheel; but as the type-wheel stops, the current becomes permanent, and accumulates sufficient power to raise the hammer, which, in so doing, breaks its own current and falls back again.

The printing telegraph is placed always by the side of the indicating telegraph, and records each message on both or all stations.

By this means mistakes in the transmission of the messages are made morally impossible. The current being always broken on both or all the stations, currents arising from bad insulation of the line-wire will not influence the harmonious working of the instruments, as long as these currents are not strong enough to work one or the other instruments by their own action, and the receiver of the message will always be able to interrupt and speak to the communicator. Besides an unlimited number of telegraphs and other instruments, for communicating particular signals, may be included in the circuit of the same line-wire.

2. Another telegraph, peculiarly adapted to record on both stations the messages delivered by the common English needle telegraph. Two magnets, by means of two pins, make dots in two different lines on a strip of paper, which is moved by clockwork. Dots on the upper line correspond with a movement of the needle to the right, and dots on the lower line correspond with movements to the left.

Instead of needle telegraphs, peculiar communicating instruments may be used, consisting either of a pair of keys only, or of a complete keyboard, which, by pressing down one of them, causes the conventional sign representing the letter marked on it, to be printed in a double line of dots.

3. A double needle telegraph, with electro-magnets, and worked by one line-wire.

4. An alarum, by which intermediate stations, when excluded from the line-wire, may be recalled into the circuit.

5. An alarum, with two large cast-iron bells, which are placed on level crossings, &c., along railways, and serve to announce the departure of each train along the line. The bells are surrounded by clockwork, which is released by a current of longer duration than is required to work the telegraphs.

6. An instrument, which is used to detect places of bad insulation in the gutta percha coated line-wire.

7. A galvanometer, to test the insulation of the line-wire, and another by which defects in the line-wire may be pointed out, without leaving the end stations.

8. Gutta percha coated electric line-wire, which was first invented by Mr. Siemens, and applied by him on a large scale, since 1847.

9. An improved Morse's telegraph, worked by secondary power.

b. GRAND DUCHY OF BADEN, SOUTHERN PARTS OF THE WEST PROVINCES OF PRUSSIA AND ELECTORAL HESSE.

311 **BIEGEL, JOHN**, *Bliessen, near St. Wendel.*

Manganese in pieces and in powder.

312 **BISCHOF & RHODIUS**, *Linz, on the Rhine.*

White lead and white zinc; Kremserweiss; pierced pieces of the same to show the structure. Hard ceruse; pierced pieces of the same. Soft ceruse. White zinc; pierced piece of the same.

[White zinc has been lately introduced both on the Continent and in this country as a substitute for white lead. The advantages appear to consist in its smaller liability to discolour under the influence of an impure atmosphere, and in the fact that workmen suffer less in the manufacture of white zinc (oxide of zinc) than they do in that of white lead (carbonate of oxide of lead). The white of Krems, called Kremserweiss, is a pure carbonate of lead of remarkably bright colour.—R. H.]

313 **BLEIBTREU, LEOPOLD**, *Bonn.*

Two cylindrical blocks of alum, common and refined. The Rhenish alum is usually conveyed in crystallized cylindric blocks without any external case to protect them.

[The tertiary beds on the banks of the Rhine, near Bonn, contain large masses of lignite, in which is potash and a certain proportion of iron pyrites. These beds are interstratified with clays consisting of nearly pure alumina. The sulphuric acid, alumina, and potash required for the manufacture of alum, are obtained by burning together the pyritous wood and the aluminous earth. A double decomposition takes place during the combustion, the iron being left in the shape of peroxide colouring the ash, while the double sulphate of alumina and potash is produced. The burnt ashes being soaked in water, the alum is dissolved out and afterwards purified; it is at length crystallized and is then fit for sale.—D. T. A.]

314 **BRASSEUR & Co.**, *Nippes, near Cologne*—Inventors and Manufacturers.

A case containing leaden plates, with the oxide, and specimens of white lead.

[The exhibitors state, that, by adopting precautionary measures peculiar to themselves, they have succeeded in preventing the occurrence of any cases of disease from the poisonous metallic compounds which the workmen have to handle. In five years, it is said that not a single case of disease from this cause was known among the workmen. The exhibitors do not describe the means employed for this purpose; probably they resemble in their main features those in use in this country, which, when thoroughly carried out, are generally successful in the prevention of the poisonous effects of lead.—R. E.]

315 **BREDT & Co.**, *Stolberg*—Manufacturers.

Ores of zinc and lead. Willemite from the mine "Busbacher-Berg." The crystals have a density of 4·13, and a hardness between 4 and 5. Their composition is $\dot{\mathrm{Zn}}^3\,\dddot{\mathrm{Si}}$. Calamine from the mines "Busbacher-Berg" and "Zufriedenheit." Zinc melted in the zinc-works "Steinfurth," from a mixture of the three aforesaid ores.

[The willemite of Leonhard is the willelmine of Levy and Bendant; and in addition to the locality named, is found in the calamine deposits of the Vieille Montagne, near Aix-la-Chapelle. It is an anhydrous silicate of zinc, being composed of silica, oxide of zinc, and a small quantity of oxide of iron. Calamine varies exceedingly in its composition. That of La Vieille Montagne containing 89 per cent. of carbonate of zinc; that of Stolberg but 60 per cent.; and the electric calamine of Busgan being a silicate containing 66 of oxide of zinc and 27 of silica. The process of obtaining zinc from the ore is to melt it in a reduction furnace, containing long earthenware tubes through which the metal passes, and is collected in close vessels to protect the zinc from oxidation.—R. H.]

Chlorophosphate of lead, from the mine Busbacher-Berg, where that ore is very abundant. Lead from chlorophosphate of lead, without mixture of other ore. The composition of this metal is—lead 98·84; copper 0·52; iron 0·20; silver 0·07; phosphorus 0·20. White lead: carbonate of lead from the mine Zufriedenheit. Sulphuret of lead from the mine Zufriedenheit.

316 **MEINERZHAGEN, AND KREUSER BROTHERS**—*Mechernich and Commern.*

Various specimens of lead-ore, found in the mines of the Count Lippe, and of the Messrs. Kreuser Brothers, on the "Lead mount" in the Eiffel country, at three different layers.

Knolls—that is, the ore separated from the smaller parts, as they are raised from the shafts.

Ore produced from knolls, viz., fine crown ore; fine dry-ground ore; schliech, prepared upon washing tablets or buddles; principal schliech, produced upon the shaling tables of Carinthia.

Metallic-lead, produced from ore of this country. Chest of small shot, from the same.

317 **PORZELT & HARPERATH**, *Cologne*—Manufacturers.

An ornamented white Carrara marble chimney-piece, in renaissance style. Slab of coloured marble.

Marble blocks in their natural state.

318 **SOCIETE des MINES et FONDERIES d' ESCHWEILER**, *Stolberg.*

Samples of lead and zinc ore.

Block of silver, weight about 11 lbs.

Plate of spelter; and pig of refined lead.

[The silver which is combined with the lead in the ore is separated by exposing the metal in furnaces, so arranged that a strong current of atmospheric air is continually passing over its surface. By this process the lead is oxidized, and litharge or red lead produced, the silver being left behind in a state of purity.—R. H.]

319 **VON MUELMANN, ALBERT**, *Plato Zeche*—Proprietor.

Specimens of peat or brown coal. Fire clay and fire brick. Crucible.

[The original products were found and worked on the lands of the exhibitor. The peat is used entirely in the manufacture of earthenware. The crucibles contain, in addition to the original elements, black lead from Bavaria. Retorts and other earthenware articles, as well as fire bricks for blast and puddling furnaces, are manufactured from the products. The bricks are exhibited for cheapness and quality.]

320 Waldthausen, O. W., *Clarenburg, near Cologne*—Manufacturer.

White lead; exhibited for beauty and cheapness of manufacture.

[White lead is so very extensively used as a pigment, both alone and as a basis for various colours, that any improved or less costly mode of manufacture than that at present used would be of great value. Various processes are adopted in its manufacture.—D. J. A.]

321 Landau, Salomon, *Coblenz and Andernach.*

Lava millstones. These stones come out of the lava quarries of Nieder Mendig, near Andernach on the Rhine, and considered to be of superior qualities. They are chiefly used for grinding all sorts of corn, bark, colours, mustard, drugs, &c. They can be procured as large as 6 feet in diameter and 18 inches thick. The quarries, which are about 150 feet deep, employ some hundreds of men.

[The millstones of Nieder Mendig are obtained from lava that has been poured out from the long-extinct volcanoes of the Lower Rhine. This lava is now almost basaltic, and is extremely hard and coarse. It separates easily into columnar shapes, and makes excellent millstones, which are exported to most parts of the world. They were well known to the Romans.—D. T. A.]

322 Hagen, Francis, *Cologne.*

Ores of zinc (calamine) from "Margaretha Josepha" mine at Berg. Gladbach, near Mülheim on the Rhine. Spelter from the same. These are fair average specimens of the produce of the mine, for the purpose of giving an idea of the general development of the veins.

323 König, Gerhard, *Treves.*

Sandstone for buildings and sculpture. Specimen from Udelfangen, very strong, and employed in the building of the church of St. Laurence in Treves.

Sandstone from Aix, and of the same sort as that used by the Romans in the construction of the celebrated Porta Nigra, at Treves.

Sandstone from Lorich, Menningen, Wasserlisch, and Tawern.

324 Steel-works—*Lohe, near Siegen.*

Specular steel-iron, produced from carbonated iron ore.

Pig-iron, produced from carbonated iron ore and hydrated oxide. Iron ore, to be used in the production of natural steel. Natural steel, first quality (noble steel). Natural steel, second quality (middle steel). Materials for the production of these articles. Carbonated iron ore, from the mine Stahlberg, near Müsen, district of Siegen. Hydrated oxide iron ore, from a mine in the neighbourhood of Müsen. Slag from the blast furnace. Pumice-slag by watering the former. Slag from the conversion of the steel-iron into natural steel.

[The iron ore at and near Siegen, and in various other places on the Rhine, both in Prussia and the Duchy of Nassau, consists, for the most part, of the kind called "spathic iron," which is a crystalline carbonate mixed with more or less carbonate of lime, and often not a little resembling calc-spar. This ore is so free from sulphur and phosphorus, that the first result of smelting it by means of charcoal fuel is to produce a kind of pig-iron very nearly resembling steel, and capable of being used for many of the purposes of steel. Together with the carbonate a considerable quantity of oxide of iron also exists in the neighbourhood; and there would seem no reason why very large manufactories of iron might not succeed near the banks of the Rhine, where the coal from more than one locality may be had by water at moderate prices, and where the high protective duties of the Customs Union continue to exclude all cheap iron of whatever kind. There are numerous mines and several furnaces for iron near the localities here referred to. The sparry carbonate of iron is called by the Germans "stahlstein," or steelstone, from the result already mentioned.—D. T. A.]

325 Weber, Charles, *Mannheim*—Manufacturer.

Rough pebble, taken from the bed of the Rhine; and another, of the same description, also taken from the bed of the Rhine, and cut as a diamond. The pebble was originally of an immense size. It is exhibited on account of its workmanship, and its purity and regularity of cut, which caused the exhibitor a full twelvemonth's incessant labour.

326 Royal Mines at Lohe, *near Siegen.*

Sparry and brown iron-stone from the blast furnace. Hydrated oxide iron ore.

[The carbonate of iron of the neighbourhood of Bonn contains usually about 64 per cent. of protoxide of iron, with carbonic acid, some oxide of manganese, magnesia and lime. The composition of the hydrated oxide is, in 100 parts—iron, 59·15; oxygen, 26·15; water, 14·70. The chemical composition of the ores from different localities varies slightly.

Several varieties of the so-called "German steel" are known in commerce. Various kinds of furnaces are employed in its manufacture, according to the character of the ore to be smelted, the steel being made direct from the ore. In the German process of making steel, the loss of iron amounts to from 20 to 30 per cent., and very nearly 600 bushels of charcoal are consumed per ton. Previously to smelting the ores, their finer varieties are selected, pounded, and washed to remove impurities; it is then mixed with charcoal, and placed in the furnace, which is excited by the cold-blast. The Indian wootz is of a similar character to the "German steel."

The Royal Foundry at Berlin has been long celebrated for the production of iron. In this process about 48 lbs. of coke are used for producing 100 lbs. of iron.—R. H.]

327 Marquardt, Dr. L. C., *Bonn.*

Chloroform; sulphuric ether, concentrated acetic acid, cyanide of potassium, and other chemicals.

328 Pauly, Otto, *Chemical Factory, Rüppurr, near Carlsruhe*—Manufacturer.

Specimens of prussiate of potash, sal-ammonia, muriate of ammonia, and phosphorus.

329 Koch, Charles August, *Gladbach, near Mulheim, on the Rhine*—Manufacturer.

Ream superfine blue and cream thick and thin post paper.

Medium, royal, super-royal, and imperial paper for mercantile books. Plate-paper for copper-plate printing and lithography. Carton papers for different purposes.

330 Eipenschleid, L. *Neuweid*—Manufacturer.

Potato flour.

331 Welcker, A. C., *Wallersheim, near Coblenz,*—Manufacturer.

Farina, or improved potato flour; the same, ground. Extensively used for stiffening muslins, &c.

332 Wahl, Fredrich, *Neuwied.*

Sago and potato-flour. Manufactured without the use of any chemical substance. Exhibited on account of its purity, whiteness, &c.

333 Werth, August, & Co., *Bonn.*

Specimens of wheat starch and potato meal, and chemical productions extracted from the same.

334 Wiesman, A., & Co., *Augustenhütte, near Bonn.*

Mineral oil; bituminous paper coal; fossil black; paraffine, and fire-lac.

335 Flockenhaus & Co., *Cologne.*

"Naphtha tincture" and prepared indigo.

Coloured flock wool; printed half wool and silk; and merino wool.

The "nap tincture" is used in the treatment of the linen and cotton threads in all dark-coloured cloths.

336 Loosen, John George, *Cologne.*

Specimens of Cologne glue, packed in lint.

337 Roemer, Charles, *Brühl*—Manufacturer.

Specimens of refined bone oil, refined machine oil, and refined Provence oils. These oils are clear, and remain fluid till the thermometer sinks below zero.

[The oils here described are obtained from bones and other animal substances. They are said to retain their fluidity at an extremely low temperature, and are employed for lubricating machines, &c. Most of the ordinary oils become partially concreted at moderately low temperatures. This is due to the separation of crystalline particles of stearine from the oleine, or liquid portion. The latter forms the oils in question, the separation being effected by the combined means of cold and pressure.—R. E.]

338 Grund, *Carlsruhe.*

Two pictures painted by new processes.

339 Homberg & Scheibler, *Eupen.*

Specimens of buckskin and ladies' cloth.

340 Mengelbier, J., *Aix-la-Chapelle*—Manufacturer. (Agent, J. Nuellens, 43 Albion Street, Hyde Park Terrace.)

Carriage, called calash, with Collinge's patent springs of English steel; the body of mahogany panels, the inside lined with Lyons silk.

341 Mies, Josephus, *Cologne*—Manufacturer.

Various trusses and bandages, exhibited for their simplicity and cheapness.

342 Richard, L., *Berlin and Locle, Neufchâtel*—Inventor and Manufacturer.

A ship's chronometer, and an explanatory plan, being a novel invention.

343 Dorer, Michael, *Furtwangen in the Black Forest, Baden*—Manufacturer.

An anchor-watch, entirely made of ivory, including the wheels, anchor, balances, bridges, shoulders, spring-box, case, inside cover, and the face; the screws are gold, and the moving power is steel. It works in ten rubies, and has seconds. Its weight is, glass and vase included, only half an ounce.

Another, similar, only having no seconds; runs in eight rubies and steel screws. Its weight is five-eighths of an ounce.

344 Baunscheidt, Charles, *Endenich, near Bonn*—Inventor.

"Life-animators, new instruments for the medical art."

[The exhibitor claims for his instruments the power of expelling "matters and humours from the body, and infusing animating substances through the skin," from which effects it is considered that great benefits are to be expected. The precise value of the remedies proposed is not described.—R. E.]

Artificial leech.

345 Rolffs & Co., *Cologne and Siegburg*—Manufacturers.

Printed calicoes and handkerchiefs, printed by machinery invented by the exhibitors.

346 Wagner & Son, *Aix-la-Chapelle*—Manufacturers.

Twelve pieces of woollen cloth.

347 Christoffel, Louis, *Montjoie near Cologne*—Manufacturer.

Specimens of woollen buckskins for winter and summer.

348 Elbers, Johann H., *Montjoie near Cologne*—Manufacturer.

Fancy cassimeres of 56 inches and 28 inches. Buckskins for winter and summer. Fancy cassimeres, &c.

349 Jansen, John W., *Montjoie near Cologne*—Manufacturer.

Specimens of woollen stuff for summer paletots. Woollen summer buckskin, worked with silk. Woollen winter buckskin, manufactured chiefly from wools of Silesia.

350 Offermann, F. W., *Imgenbruch, near Aix-la-Chapelle*—Manufacturer.

Various specimens of coloured buckskin.

351 Merkelbach T., & Son, *Montjoie near Cologne*—Manufacturers.

Specimens of winter, summer, and fancy buckskins.

352 Mueller, M. W., *Montjoie near Cologne*—Manufacturer.

Specimens of winter and summer buckskin. Summer paletot stuff of Australian wool.

353 Sauerbier, J. A., *Montjoie*—Manufacturer.

Specimens of winter, summer, and fancy buckskin. Paletot stuffs, &c.

354 Scheibler, F. J., *Montjoie near Cologne*—Manufacturer.

Specimens of summer buckskins, woven with treddles, and Jacquard designs. The diagonal stripes are not obstructed by the stripes in the warp. Sample of flannel, made from yarn which is a mixture of silk-waste and wool. Hitherto, silk and wool have only been used together twisted, or the warp was silk and the weft woollen. The peculiarities of this article are, that the silk and wool are more solidly united, and may be spun finer than when alone. Jacquard designs for winter goods.

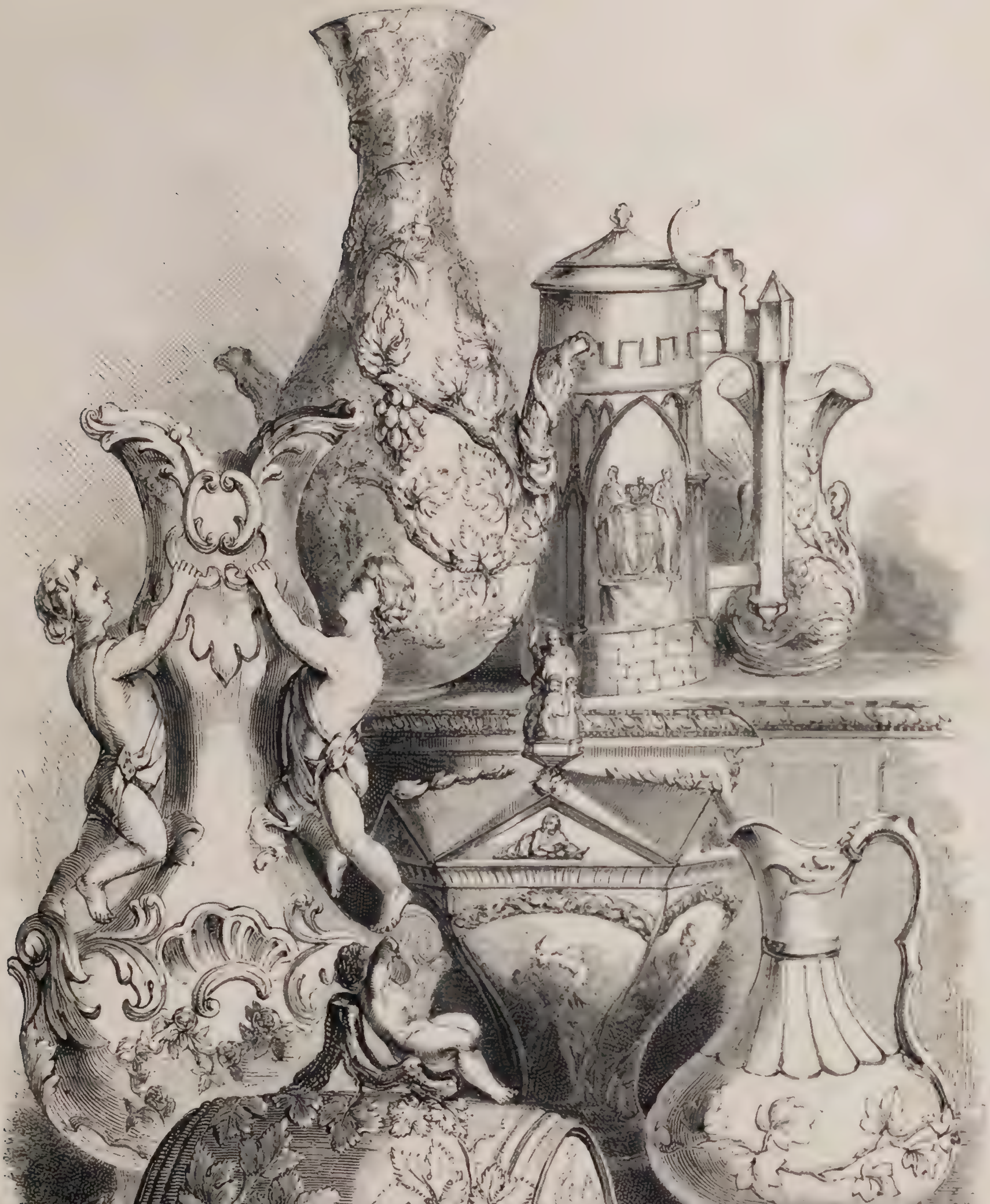
355 Ulenberg & Schnitzler, *Opladen, near Cologne*—Manufacturers.

Woollen yarns: three-thread grey, oval, and superfine lilac. Knitting worsted yarns, in Nos. 14, 16, 18, 22, and 26, various colours.

Patterns of screws: the wire produced from Rhenish and Westphalian iron.

356 Menzerath, John, *Imgenbruch, near Aix-la-Chapelle*—Manufacturer. (Agents in London, Messrs. Droin, Crüger, & Co., 47a Moorgate Street.)

Specimens of black cassimeres (satin-de-laine) manufactured from Silesian wools.



SPECIMEN OF ORNAMENTAL EARTHENWARE. ZOLLVEREIN.

357 Haas, L. F., & Sons, *Burtscheid, near Aix-la-Chapelle*—Manufacturers. Agent in London, Mr. Henry Hoffman.

Specimens of white cloth; white kerseymere for court waistcoats; white satin for court dress; satin in fancy colours, and doeskin in fancy patterns.

358 Visseur, P., *Aix-la-Chapelle*—Manufacturer.

Specimens of doeskins and ladies' cloth.

359 Zambona Brothers, *Burtscheid, near Aix-la-Chapelle*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Winter cashmeres; demi-saison and summer; black twisted winter and summer tricots.

360 Andreae, Christoph, *Mülheim-on-the-Rhine, near Cologne*—Manufacturer. (Agents in London, E. & H. Blank.

An assortment of velvets: crimson and black, German style; black, Lyons and Genoa styles; mantilla, black and plush garnet. Black figured velvet shawl. Worsted plush, plain crimson; clear garnet; dark garnet; striped with satin; and with bayadère, for furnitures. Velvet ribbons.

361 Villeroy & Boch, *Wallerfangen Saarlouis, Mannheim, and Mettlach, near Treves*—Manufacturers and Proprietors. (Agents in London, W. Adolph & Co.)

Specimens of earthenware, in various shapes and colours, decorated with ornaments of the same material, but differently coloured with platina, gold, and paintings: vases, hampers, hanging flower-pots, baskets, jugs, wine-coolers, punch-bowls, services for tea, fancy objects, &c.

A group of these objects is represented in the adjoining Plate 110.

Common and fine pottery-wares, of white and coloured material, painted, printed, and decorated with gold: table and tea services, vases, fancy objects, &c.

Kitchen pottery of black material with white enamel, called iron ware.

[Of earthenware, the value of the exports exceeds that of the imports by 1,620,000 thalers. The German ornaments, for architectural uses, in clay; the articles of earthenware and fayence; the stoves, elevated by the design and forms that have been imparted to them, to products of superior art—all these may compete with analogous products of foreign manufacture for cheapness in every market.]

362 Boehme, Charles Lewis, *Aix-la-Chapelle and Imgenbruch*—Manufacturer. (Agent, B. Grut, 11 Lime Street.)

Specimens of cashmere cloth—Pensée, black, and olive.

363 Brüegmann & Co., *Borcette, near Aix-la-Chapelle.* (Agent, G. Enes, 28 Sion Chambers.)

Thin and heavy fancy cashmeres. Mohair headings, yellow, and blue and red; white, two qualities. Mohair cloth of fine twisted yarns.

364 Feaux & Riedel, *Aix-la-Chapelle*—Manufacturers.

Russia cloth, bronze, for riding-coats. Piece of wool satinor; black croisé; and black royal cashmere.

365 Schoeller, John P., *Düren*—Manufacturer.

Wool-dyed black superfine cloth; wool-dyed blue marine cloth. Black superfine satin-de-laine. Made and finished after the English methods.

366 Haan, C., & Sons, *Moselkern, near Coblenz*—Manufacturers.

Woollen coverlets, viz.:—White ordinary blanket, with red stripes. Superior white blanket; white and red check blanket. Horse-cover, checked. Ordinary grey blanket.

367 Hendrichs, Francis, *Eupen, near Aix-la-Chapelle*—Manufacturer.

Specimens of fine and superfine cloths.

368 Pauli & Buchholz, *Borcette, near Aix-la-Chapelle*—Manufacturers of Cloth.

Specimens of black royal; croisé; cashmere; satin; and satin tigre.

369 Peill & Co., *Düren*—Manufacturers.

Three pieces of wool-dyed cloth:—Blue Grecian, olive, and royal blue. Raw material: Silesian wool.

370 Kayser, A., *Aix-la-Chapelle*—Manufacturer.

Various pieces of thin twilled cloth, and ladies' cloth.

371 Kesselkaul, John Henry, *Aix-la-Chapelle*—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Various pieces of black twilled cloth, plain cloth, and doeskin.

372 Kleinschmidt & Von Halfern, *Burtscheid, near Aix-la-Chapelle*—Manufacturer.

Drap croisé noir Electoral. D'Amazone Corinthe; myrthe; and bronze. All piece-coloured, and manufactured exclusively from German wool.

373 Knops Brothers, Aloys, *Aix-la-Chapelle*—Manufacturers.

An assortment of black cloth, plain, and twilled; and black doeskin.

374 Schoeller, L., & Sons, *Düren*—Manufacturers. (Agents, W. Adolph & Co., St. Mary Axe.)

Specimens of woollen cloths:—Wool-dyed blue cloth; pomme de rhêne; black. Sourier. Claret. Raisix de Corinthe. Crêpe de laine, broncé d'or, blue.

375 Thywissen Brothers, *Aix-la-Chapelle*—Manufacturers.

Various assortments of light twilled cloth; doeskin; light and heavy paletot; light and heavy tricot; light fancy cashmere; silk twisted; and heavy fancy cashmere.

376 Sternickel & Guelcher, *Eupen, near Aix-la-Chapelle*—Manufacturers.

Two pieces of black twilled cloth.

377 Pass, C. G., *Remscheid*—Manufacturer.

Silk ribbons and braid: silk ferret ribbon; floret twilled silk ribbon; coloured twilled silk braid; black shining braid; reddish twilled floret; white twilled silk; and coloured fine floret braid.

Black shining Renforce silk laces, of 1 yard length, with black tags.

378 Anthoni, A., *Imgenbruck, Aix-la-Chapelle*—Manufacturer. (Agents, B. Grut, 1 Basinghall Street, and Tootal & Brown, 73 and 74 Piccadilly.)

Various specimens of black cloth.

379 Andreae, C., *Mülheim-on-the-Rhine, near Cologne*—Manufacturer.

Velvet ribbons. Gilets velours, double stamped—a new article. Gilets velours chiné; figured velvet; and silk plush.

380 Felten & Guilleaume, *Cologne*—Manufacturers.

Flat iron-wire rope, manufactured from German iron-wire.

Ropes of Rhenish hemp. The Rhenish hemp is strong, and especially suitable for use in water.

Iron-wire ropes. Patent flat Manilla hemp ropes. Ropes, cords, and threads, manufactured from Rhenish, Russian, and Italian hemp; the finest from German, Flemish, and Russian flax.

Samples of starch, manufactured of wheat.

381 FEDERER BROTHERS, *Freiburg*—Manufacturers.

Black polished calf-skin leather.

Boot leather.

Boot-pieces of calf-skin leather.

382 HEINTZE & FREUDENBERG, *Weinheim* — Manufacturers.) Agent in Liverpool, Mr. L. Heintze, 1 School Lane.)

Calf-skins, japanned black, for boots and shoes; various qualities.

Calf-skins, black polished, for boots and shoes.

The general assortment consists of six qualities, A to F, of which three, A C F, are sent in for exhibition. These figures refer to the japanned skins, of which from 7,000 to 8,000 are manufactured by the exhibitors per annum; as also about 15,000 polished ones during the same period, and upon which 120 hands are kept in constant employ. Both articles are in great demand.

383 OBERCONZ, H., *Treves*—Manufacturer.

Skins of morocco and russia leather. Exhibited on account of their preparation in a new manner with known materials.

[The tanning has been effected by aspen and birch, till now not used in the department of Treves. The oil of the birch-tree, necessary in the manufacture of morocco leather, was generally obtained from Russia; but the exhibitor procures it out of the white and leathery parts (the epidermis) of the bark of the birch-tree, and obtains about 20 per cent. of pure oil, and 30 per cent. of oil for burning. The white and leathery portion having been removed from the bark of the birch-tree, the remaining parts are used for tanning.]

German and Java upper leather. Brown and black calf leather. Half a skin of leather for soles; tanned with the inner and smooth bark of the oak.

384 WEBER, WILLIAM, *St. Vith*—Manufacturer.

Hide of a Java black hide; calf's skin, tanned in five months, including the preparatory processes.

385 BERRES, MICHAEL, *Treves*—Manufacturer.

Leather, consisting of hides tanned with bark of the environs of Treves.

386 BUSCHMANN, JOSEPHUS WILLIAM, *St. Vith*—*Manufacturer.*

Hide of leather for soles; tanned skin of a Buenos-Ayrean ox.

387 LEUDERSDORFF, A. CAHEN, *Mulheim-on-the-Rhine.*

Specimen of neat's leather and calf leather; and pair of boot legs.

388 WEILAND, F., *Cassel*—Manufacturer.

Brace of pistols, with complete apparatus, in a case.

389 ENGEL, P. H., *Hanau*—Inventor and Manufacturer.

Proof prints, by an improved printing press, with some original stamps.

390 SOMMER, JOSEPHUS, *Heidelberg*—Manufacturer.

Portfolio and writing apparatus, velvet, with view of Heidelberg.

Glove-case, velvet, and ornaments of ivory.

Small writing-desk, papier-maché, with view of Heidelberg.

Shaving-case, complete.

Ladies' work-box, complete.

Pocket-books, gilt calf, with lock.

Memorandum-book, silk embroidery.

Cigar-cases, set in steel, and silk embroidery; velvet, and embroidery, &c.; porte-monnaie, mounted, in steel and embroidery, with superior mountings, with view of Heidelberg painted on porcelain, and a view of Heidelberg etched on steel.

Spectacle-case: steel frame and embroidery.

391 KARCHER, FRIEDRICH, *Carlsruhe*—Inventor and Manufacturer.

Pounce-paper, or transparent tracing, drawing, and modelling paper, manufactured by the exhibitor, by a peculiar and patent process.

The principal merits of this article consists of its extreme cheapness, transparency, softness, and the absence of any species of oily, greasy, or other objectionable substances. It can be employed in the same way as any other drawing-paper, and it admits of being stretched and fixed on drawing-boards and frames, and will also bear painting on with water-colours, China-inks, varnish, &c.

392 HOESCH & SON, *Duren*—Manufacturers.

Tissue paper in different colours. Coloured post paper, in 12mo and in 4to. Blue, white, and extra fine white post paper. Writing paper in folio; and blue, with lines. Blue medium; white medium. Spelter plate for smoothing paper.

393 SCHUELL, LUDOLPH, *Duren*—Manufacturer.

Thick and extra thick post paper (glazed) in folio, &c.; large blue post; ribbed medium, &c.

394 PIETTE, LEWIS, *Dillengen*—Manufacturer.

Post paper, blue and white. Writing paper, white and coloured. Straw paper.

395 FLAMMERSHEIM, WILLIAM, *Cologne*—Manufacturer.

Rolls of tapestry, copied from original paintings.

396 MEIXEL, ANTONIE, *Baden Baden*—Manufacturers.

Knitted linen shawls, made with two needles of number 200 thread, exhibited on account of the beauty of the work.

397 ROESSLER, C. H., *Hanau, in Hesse*—Manufacturer. (Agents, Oppenheim and Co., 18 Bow Lane, Cheapside.)

A variety of felt and silk hats, particularly adapted for exportation.

398 LEIMKÜHLER, LEWIS, *Aix-la-Chapelle*—Manufacturer.

Black felt hat; black soft short-haired hat; gray hat, double rings; black silk hat.

399 SCHUETZENDORFF, H. J., *Cologne*—Manufacturer.

Gentlemen's ball-room boots with silk tops, to replace pumps and stockings; boots in buckskin without seam; and boots for children.

400 KOHLSTADT, LEWIS, *Cologne*—Manufacturer.

An assortment of braces and garters, of silk and caoutchouc.

401 WAHLEN & SCHMIDT, *Cologne*—Manufacturers. (Agent, W. Cordingley & Co., 18 Aldermanbury.)

An assortment of kid gloves, and card of patterns.

402 SCHÖN, PHILIP, *St. Goar*—Manufacturer.

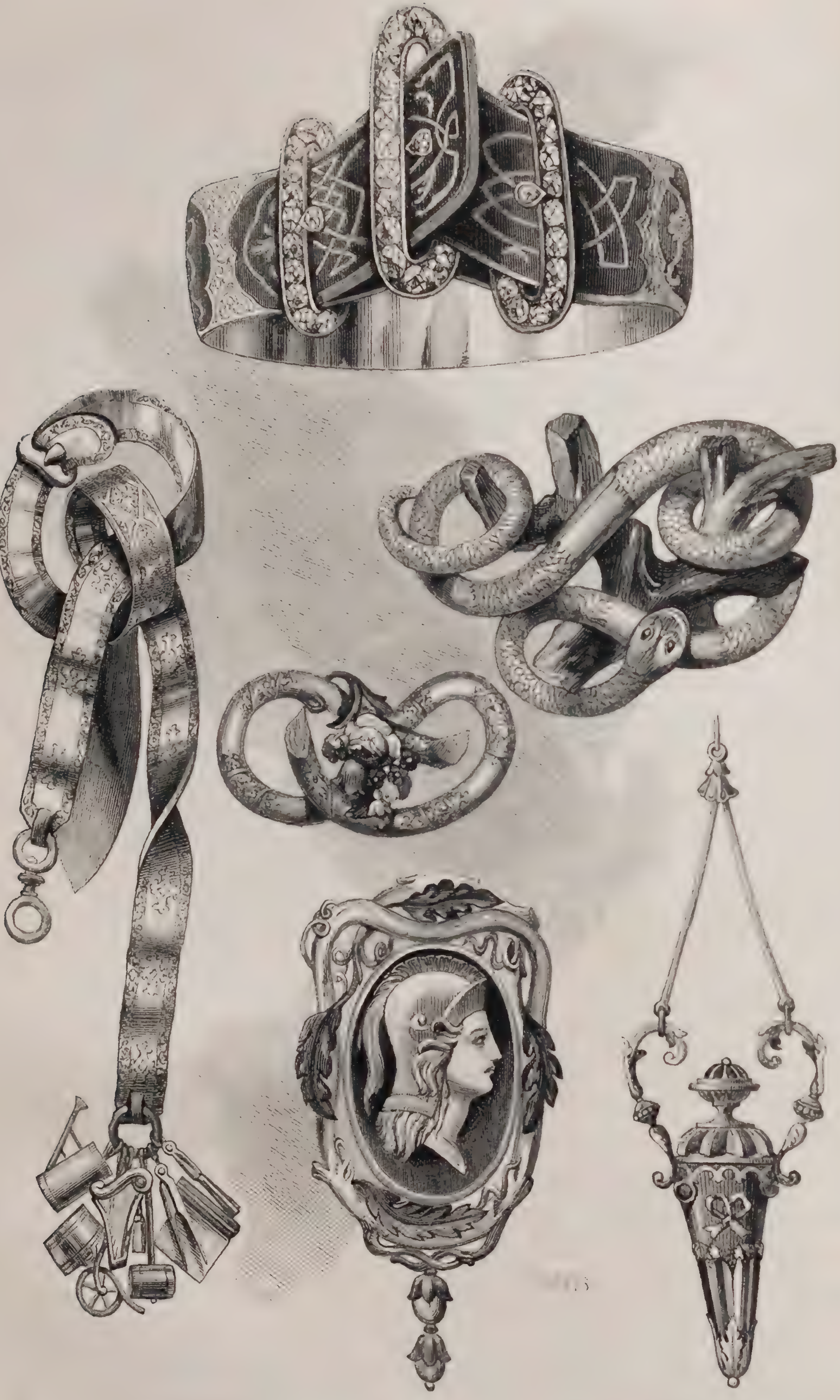
Saws for goldsmiths and silversmiths, and for carpenters and comb-makers.

The blades are made of steel procured from watch-spring manufactories in Switzerland and France.

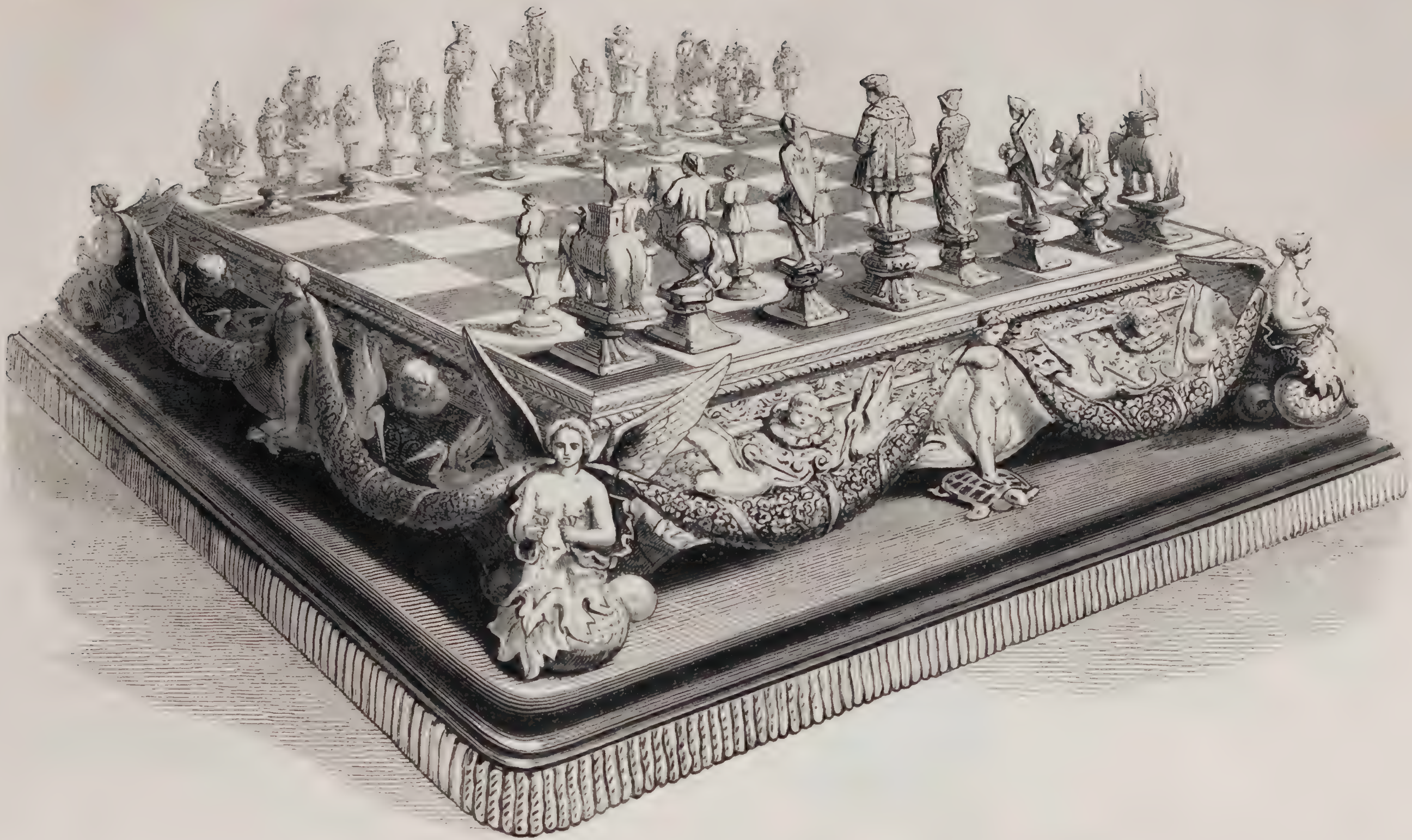
The teeth of the compass-saws are filed, and English files only can be used for that purpose.

403 ULRICH, JACOB, *St. Goar*—Manufacturer.

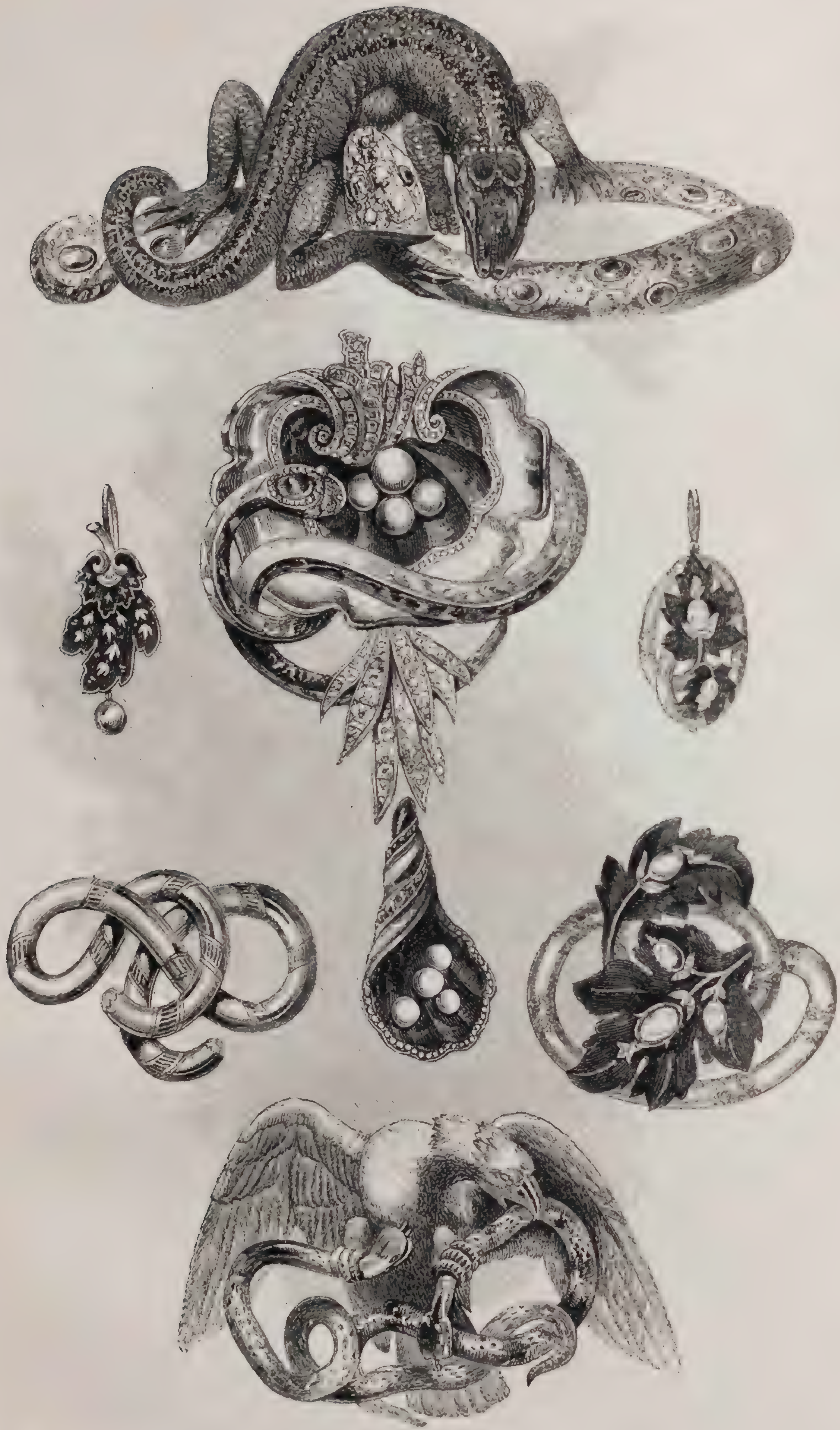
Saws, of different dimensions, for the use of goldsmiths, silversmiths, girdlers, comb-makers, turners in ivory, and joiners.



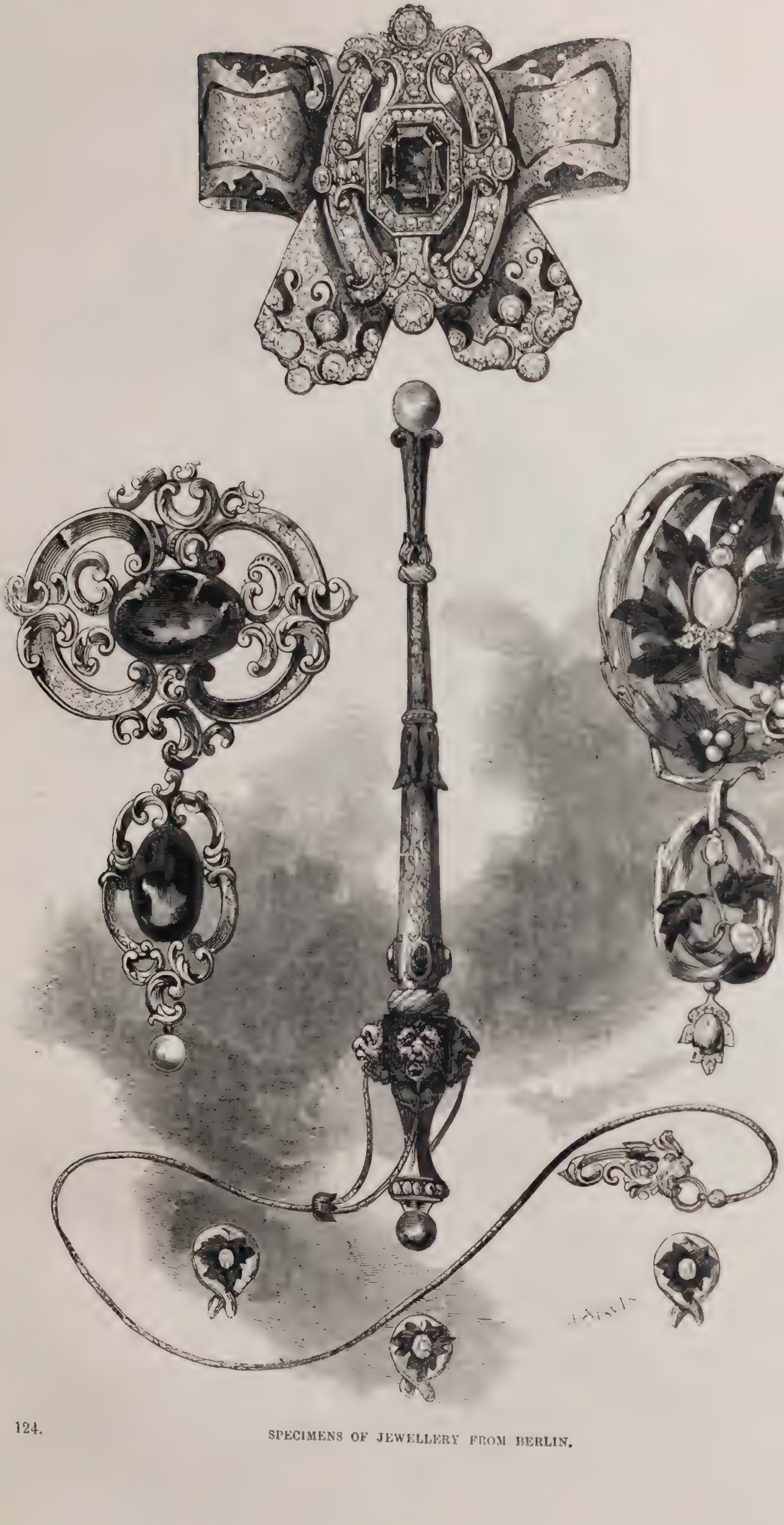
173. SPECIMENS OF JEWELLERY. MESSRS J. F. BACKES AND CO. FRANKFORT-ON-THE-MAINE.



154. SET OF CHESSMEN AND BOARD, IN SILVER AND GOLD. MESSRS. C. M. WEISHAUPT AND SONS. ZOLLVEREIN.



SPECIMENS OF JEWELLERY. MESSRS. J. F. BACKES AND CO. FRANKFORT-ON-THE-MAINE. ZOLLVEREIN.



124. SPECIMENS OF JEWELLERY FROM BERLIN.

These saws are manufactured of spring-steel. Those for sawing wood and horn are made of broad white spring-steel; and those for sawing metals are made of old watch-springs.

404 **Reinecker & Co., George Albert**, *Cologne*—Manufacturers.

Samples of pins, hooks and eyes, and elastic wires, representing Gothic arches, bearing the arms of the city of Cologne.

405 **Schleicher, Charles**, *Schönthal, near Aix-la-Chapelle*—Manufacturer.

Galvanized cast-steel wire. Various wire rings, and samples of unfinished and finished needles. The raw material is of English origin.

406 **Assmann, Justus**, *Neuwied on the Rhine*—Manufacturer.

Various culinary and other articles made of rolled sheet iron, and tinned with Banca tin, consisting of stew-pans cake-plates, water-cans, ladles, tea-kettles, coffee-pots, milk-cans, frying-pans, &c.

407 **Beissel (Widow) & Son**, *Aix-la-Chapelle*—Manufacturers. (Agent, O. Frauenknecht, 80 Bishopsgate Street Within.)

Samples of different qualities of needles, manufactured of cast steel from the works of Messrs. Sanderson Brothers and Co., Sheffield, and rolled and drawn into wire in Germany. Fancy bodkins, knitting pins, &c.

408 **Kaesen, Jacob**, *Cologne*—Manufacturer. (Agent, A. J. Hoffstaedt, 4 Bridge Street, Blackfriars.)

Iron decorated mantle stoves and ovens; modelled, cast, gilt, &c., by the exhibitor.

409 **Juenger, Jacob's (Widow)**, *Hanau*—Manufacturer.

An assortment of samples of enamel:—Red; rose opal, light and dark; dark blue, transparent and opaque; light blue, transparent, and opaque; violet, transparent; grey, transparent; black; green, light and dark, transparent and opaque; yellow, light and dark, transparent; orange; yellow, opaque; opal; turquoise, white, &c.

[The basis of all kinds of enamel is a pure glass, which is rendered either semi-transparent or opaque by the admixture of metallic oxides. White enamel is made by melting the oxide of tin with glass.—J. H.]

410 **Steinhaeuer & Bier**, *Hanau, Hesse*—Inventors and Manufacturers.

A large assortment of jewellery, consisting of brooches, bracelets, and rings.

411 **Backes, J. F. & Co.**, *Hanau, Hesse*—Inventors and Manufacturers. (Agent in London, T. Sachs, St. George's Terrace, Hyde Park.)

A large assortment of jewellery, consisting of brooches, ear-rings, bracelets, watch-hooks, rings, medallions, &c.

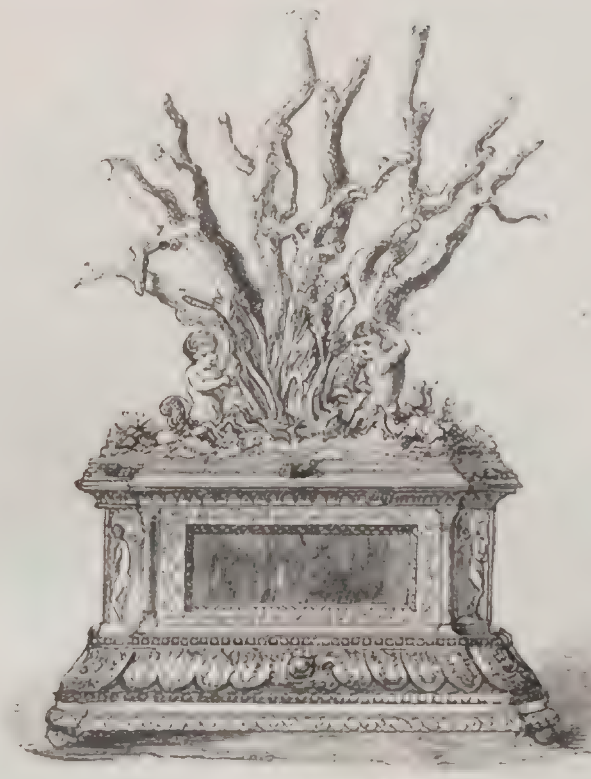
412 **Weishaupt, C. M. & Sons**, *Hanau*. (Agent, Mr. Robert Phillips, Messrs. Phillips and Son, 31 Cockspur Street, London).

Set of chess-men and board, in silver and gold in renaissance style, ornamented with enamel, precious stones, and pearls. The chief figures are portraits of the Emperor Charles V., and his daughter Margaretta of Parma, a Stadtholder of the Netherlands, King Francis I. of France, and his sister Margaretta of Valois.

This set is represented in the annexed Plate 154.

Casket in silver, with a coral tree, various precious stones, and four malachite slabs, in the renaissance style, containing two doors, which open with a spring, and a musical box.

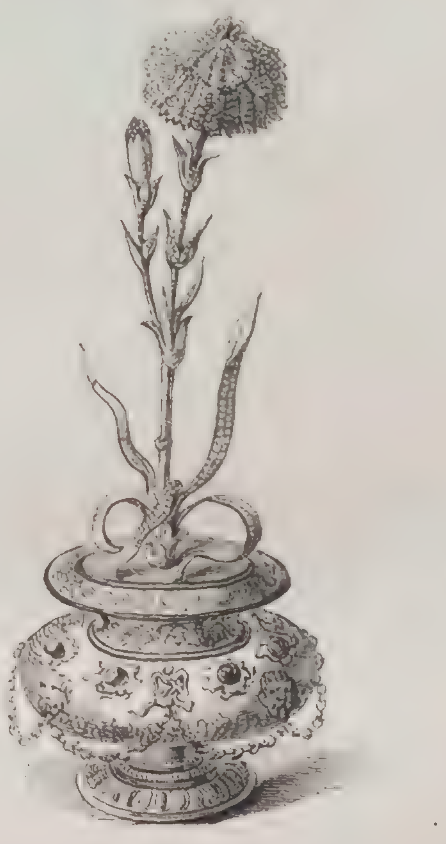
This casket is represented in the annexed cut.



Weishaupt's Silver Casket.

413 **Haulick, Frederick G.**, *Hanau*—Manufacturer.

Flower, in brilliants and rubies, with leaves of emerald and green enamel, in a vase of gold and enamel. The flower can be detached in the middle of the stem, and used as a brooch or hair pin. This flower is represented in the annexed cut.



Haulick's Jewel Flower.

414 **Wagner, Adolphus**, *Sulzbach, near Saarbrück*—Producer.

Bottles, manufactured for Rhenish sparkling wine; for hock, with a flat bottom and a ribbed neck; and for hock, with concave bottom and a smooth neck. Various other bottles.

415 **Wiegandt, J.**, *Cologne*—Manufacturer.

Circular tablet, of mosaic-work, composed of 24,700 pieces.

Specimens of inlaid work for floors, consisting of concentric circles and radii, containing 2,996 pieces.

Two of the same sort, with stars, and 864 pieces.

416 Kramer, Charles A., *Cologne*—Inventor.

Plaster cast in the rococo style. Cornice, and ornaments for keystones, &c., in stucco.

417 Engelhard & Karth, *Mannheim*—Manufacturer.

Several specimens of stained paper, stretched on wooden frames.

418 Noe, O., *Hanau, Hesse*—Manufacturer.

A model of a chandelier, in gypsum.

419 Faller, Tritscheller & Co., *Lenzkirch in the Black Forest*—Manufacturer.

A variety of straw hats for gentlemen, youths, and children, of different styles.

Round, flat, and square cigar cases.

All of purely home produce. The primitive material, the straw, cultivated in the district of Lenzkirch, and cut by the manufacturers, who subsequently bleach, plait, and work it into hats. On comparing the different methods employed for the produce of this article at Florence and other parts of Tuscany ranking high in this class of manufacture, it was discovered, that there had been lately introduced a superior method of plaiting in four meshes; that is, numbered straw, and which alone could produce first-rate qualities. The exhibitors have, for several years, endeavoured to introduce the same process at home, and have succeeded in giving this texture to about one-half of their produce.

420 Nees, A. F., *Cologne*—Manufacturer.

Samples of patent flat or curved wood mouldings, chiefly employed for making frames, and by upholsterers, decorators, &c.; made in various breadths from ½ an inch to 10 inches.

421 Pallenberg, H., *Cologne*—Manufacturer.

Lady's escritoire of rosewood, with carvings, containing secret drawers curiously arranged.

422 Kendall, H., *Cologne, and Aix-la-Chapelle*. (Agent in London, Joseph Kendall, 8 Harp Lane, Great Tower Street.)

Various samples of Eau de Cologne, pomatum, sachets, assorted perfumes, toilette soap, &c.

423 Leven, Fram, *Heidelberg*—Manufacturer and Inventor.

Heads of European animals, natural size, modelled from nature, and executed in an imitation of bronze, for the decoration of hunting rooms—

1—4 Stags'-heads, with real antlers. 5—8 Fallow-deers. 9—12 Wild boars. 13—16 Wolves. 17—18 Wild goats, with plaster of Paris horns. 19—24 Deers. 25—30 Chamois' head, with real horns. 31—34 Grey-hounds. 35—38 Pointers. 39—42 Spaniels, with long hair. 43—48 Terriers. 49—54 Foxes. 55—60 Wild cats. 61—66 Hares. 67—70 Horn-owls. 71—76 Eagles. 77—82 Capercalias.

424 Spendeck, J. P., & Co., 18 *Grosse Neugasse, Cologne.*

Samples of eau de Cologne, of various qualities and in various-sized bottles.

425 Martin, Maria Clementina, *Cologne*—Inventor and Manufacturer.

Eau de Cologne; Carmelite spirit of melissa.

426 Farina, Johann Maria, *Cologne*—Manufacturer.

Specimens of eau de Cologne, in the different sizes of bottles.

427 Herstatt, C., & Co., *Cologne*—Manufacturer.

Cologne water of different qualities.

428 Moosbrugger & Kobbe, *Coblenz*—Manufacturers.

Table slabs of artificial marble, inlaid with mosaic work. Cash-box of the same.

429 Weygold, A., *Erkelenz*—Inventor.

A piece of tapestry on canvas—Ruth and Boaz—containing upwards of 480,000 stitches, in 4,860 squares.

430 Heckel, Carl Ferdinand, *Mannheim*—Collector and Preserver of Plants.

Picturesque groups of dried alpine plants.

A volume containing a collection of 25 specimens of alpine plants. These pictures are formed solely of plants, as produced by nature, without any co-admixture of colours or dyes. They form elegant and instructive additions to an herbaria, or collections of *vertu*.

431 Cauer Brothers, *Creuznach*—Inventors.

Statue:—Arminius, prince of the Cherusci, a hostage at Rome, meditating over the deliverance of his country; designed and modelled in plaster of Paris by the exhibitor.

A faun, in plaster of Paris, carrying a vine-branch.

Full-length figure, in plaster of Paris.

Two other figures.

432 Dickert, Thomas, *Bonn*—Manufacturer.

Relievo of the "Siebengebirge," on the Rhine. Relievo of Mount Vesuvius. Intended to illustrate the geological and orological relations of the respective regions. They have been executed from the best scientific materials, and the personal observations of the exhibitor.

[These relief maps, of which there are several in the Exhibition, are well adapted for educational purposes to give a comparative idea of the actual physical features of a district. The Rhine, between Coblentz and Bonn, is so remarkable for the form and arrangement of the hills, and the shape of its small lakes, all of which are of volcanic origin, that a comparison between this district and the country around the recent volcano of Mount Vesuvius cannot fail to be instructive. The Germans were the first to introduce relief maps at moderate prices.—D. T. A.]

c. PRUSSIA AND LITHUANIA.

433 Sauken, A. von, *Julienfelde*—Producer.
Two wool fleeces.

434 Waechter, J., *Tilsit*—Producer and Manufacturer. (Agent in London, A. Gubba.)
Linseed and rape-seed cake. Grained and powdered animal charcoal. Scum of sugar for manure.

435 Hermann, C., *Dantzic*—Manufacturer.
A pair of bronze chandeliers, Greek style, after patterns of candelabra found in Pompeii.

436 Lieck, A., *Marienwerder*—Manufacturer.
Coffee machine and teapots, particularly fitted for travelling, being of small size and easily heated. A machine for mashing almonds for marchpanes.

437 Loewenson, M. *Tilsit*—Manufacturer.
A tower in filigree work set in garnets, similar to those used by the Russian Jews at the celebration of the Sabbath.

438 Mannheimer, W., *Königsberg*—Proprietor.
Two pieces of amber of 6 and 4½ pounds weight, exhibited on account of their size and beauty.

439 Hoffmann, C. W., *Dantzic*—Manufacturer.
Sundry articles manufactured from amber; beads of the same, exhibited on account of their beauty and workmanship, and to show the difficulty of joining small pieces; the uniformity of colour is very difficult to obtain. The beads are sent to show the way in which they are prepared and packed for the trade.

440 Hoffmann, G. I., *Dantzic*—Manufacturer.
Assortment of amber beads, sundry articles manufactured from amber.

441 Roy, W. von, *Dantzic*—Manufacturer and Collector.
A cabinet containing amber (raw), arranged according to natural history, which it has taken 25 years to collect. A tea-tray ornamented with the arms of Great Britain. Snuff-boxes. A hilt of a dagger. Brooches. Bracelets and seals. All manufactured from amber, and ornamented with silver.

[Amber is the resinous exudation of an extinct genus of coniferous trees, formerly existing in great abundance in the Northern hemisphere, and now washed, or dredged up, on the shores of the Baltic, chiefly between Konigsberg and Memel, but sometimes on the coast of Scandinavia. With it are sometimes found fragments of lignite, and the amber itself frequently incloses small insects and other organic substances. The outside of the amber is often marked with the impression of branches and bark, and the inside, in one instance, presents the corolla of an unknown flower. The composition of amber is complicated, and not invariable. It contains a volatile oil, two resins soluble in alcohol and ether, succinic acid, and an unsoluble bituminous substance.—D. T. A.]

442 Reichel Brothers, *Tilsit*—Manufacturers.
Various strings of musical instruments.

443 Heydenreich, *Teacher at Tilsit*—Proprietor.
A scene from sacred history carved in wood.

444 Grzybowski, *Vicar of Berent*—Proprietor.
A carving of wood in a frame, representing a vase containing flowers and birds, &c.

d. PRUSSIA.—ELECTORAL HESSE.—LIPPE.

445 Royal Prussian Salt Works, *Neusalzwerk, near Rehme.*
Samples of salt, fine and middle grains, obtained from the soole (brine), gradually purified.

446 Vorster, C. D., *Eilpe, near Hagen*—Producer.
Samples of rough or cast-iron, made malleable and decarbonised by a new process, and stated to be rendered equal to steel. Adapted for cutlery.

447 Lehrkind, Falkenroth, & Co., *Haspe, near Hagen*—Manufacturers; and Ewald Riepe, Patentee, 38 *Finsbury Square.*
Specimens of raw puddling steel made from German charcoal pig iron, from Belgian refined metal, and from Ynescedwyn refined metal. Puddled steel in bars and loops, refined by the new patent process, from Belgian, German, and Ynescedwyn pig iron. Rolled puddled steel. Puddled steel refined by the old German welding process. Patent waggon axle of refined steel.

The steel exhibited is prepared in puddling furnaces with coals. It is employed in large quantities on the Continent for the manufacture of cutlery, waggon axletrees, files, springs, &c.

It is exhibited for its cheapness, hardness, tenacity, and elasticity.

448 Stinnes, H. A. S. Mathias, *Mülheim on Ruhr*—Producer.
Samples of coke, free from heterogeneous substances, manufactured from pit-coal of the Victoria Mathias mine.

449 Dresler, J. H., sen., *Siegen*—Manufacturer and Producer.
Samples of iron ore from Hohegrethe; sparry iron ore, from Peterbach and St. Andreas; and brown iron ore, with and without manganese, from Huth; all near Hamm.

Laminated white cast-iron. White cast iron, forged pig.

Mottled iron. Grey pig iron, and grey metal foundery pig. Bar iron.

450 The United Coal Mines (Saelzer and Neu-Ack), *Essen*—Producers.
Specimen of coal, to show the produce of the mines of the exhibitors. This coal is considered to be more bituminous, and to contain less sulphur than others of the district.

451 Lambinon, Ulrich, & Co., *Brilon, near Arnsberg*—Producers.
Specimens of lead and silver ore; sulphuret of lead and zinc.

452 Rochatz, Charles, *Mülheim on Ruhr*—Manufacturer. (Agents in London, Messrs. N. M. Rothschild, 2 New Court, Swithin's Lane.)

Crystal vases with white zinc. Samples of roasted zinc ores and spelter; of zinc ores and rolled zinc. The raw materials from native mines.

White zinc is intended as a substitute for white lead, as the manufacture is not injurious to the health of the workmen. The zinc is obtained in two ways, viz., out of spelter produced from the sulphuret of zinc, or direct from the same ores by a particular process, for which a patent has been taken out.

[A Commission, appointed by the French Government, examined this question, and their report was favourable to the employment of white zinc. The effects of white-lead manufacture, as carried on at present, are exceedingly injurious to the health of those engaged in its preparation; but manufacturers who supply their workmen with drinks acidulated with sulphuric acid state that they thus secure them from lead-colic: the lead absorbed is converted into the sulphate, and thus is nearly inert. It has been stated that in white-lead manufactories, the men, from inhaling the oxide of zinc, suffer from nausea: this has been denied, where proper care has been taken to secure the workmen from the oxide of zinc during the process of its formation.

White zinc is manufactured by melting the metal, and, while it is at a high temperature, driving a current of atmospheric air upon its surface; the metal very rapidly oxidizes, and the oxide passing out of the furnace is collected—R. H.]

453 Böeing, Roehr & Lefsky, *Limburg on the Lanne*—Producer.

Rolled and hammered pieces of puddling steel; round rolled and hammered samples of steel. Made of German pig-iron, worked in puddling furnaces with pit-coal, and rolled or hammered as it comes out of the furnace. Exhibited in consequence of the assumed importance of the process.

[The peculiarity of this process would appear to consist in a method by which the iron in the puddling furnace, where it is usually kept in a state of fusion for the purpose of separating all volatile matters, is made to absorb the necessary quantity of carbon to convert it into steel. —R. H.]

454 Hambloch, Jacob, *Crombach, near Siegen*—Proprietor.

Specimens of refined steel. Raw materials—sparry iron ore from the Müsen mines, which, after smelting with charcoal, produces the Müsen steel; when this is forged with charcoal, the best qualities are obtained for cutlery and steel casting.

455 Haniel, Francis, *Ruhrort on the Ruhr*—Producer.

Specimens of coal and coke. Coal from the following mines: Heinrich, Steingatt, Hagenbeck, Sälzer and Neuack, and Zollverein. Coke from Schölerpad, Sälzer, and Newack.

[The small but important coal-field of the Ruhr, conveniently situated near Dusseldorf, on the Rhine, and occupying a triangular area of nearly 120 square miles, appears to be a continuation, across the Rhine valley, of the Belgian coal-fields, and is of the same geological age. It consists of alternating bands of sandstone and shale, with seams of ironstone and coal reposing on other beds of sandstone and shale, which are unproductive, and then on carboniferous limestone. The coal is bituminous, and of fair quality, and is much used, both in the numerous iron works and factories of Westphalia, and in many places on the Rhine, where it can be conveniently conveyed by water carriage. It enters into competition with Saare coal, and is much worked. This coal resembles that of some English coal-fields, and is worked in the same manner. It is conveyed both up and down the Rhine; and bears about the same price as that of the Saare, which is, however, generally preferred. The quantity is not very large. The cokes obtained from the Ruhr coal are tolerably good.—D. T. A.]

456 Harkort & Son, *Wetter on the Ruhr*—Manufacturers.

Samples of German crude steel, for cast-steel sword and scythe steels; best steel for knives.

Blister steel, converted from charcoal-iron.

Common steel, for files.

Spring steel, and steel for hatchets. The German crude steel is used for refining or shearing steel, and making cast steel; the blister steel is used in the manufacture of export articles.

[The ore from which this steel is made is a crystalline carbonate of considerable purity, and is called by the Germans *stahl-stein*, or stal ore. The iron obtained from this ore by smelting with charcoal is of a peculiar quality, and well adapted to form a cheap substitute for the finer kinds of steel in certain manufactures. It has been supposed that the presence of a considerable percentage of peroxide of manganese in the laminated varieties of spathic iron, commonly used for this purpose, is favourable for the conversion into steel. The stahl-stein is generally of pale-brown colour, darkening on exposure, and is more readily reduced after it has thus become modified. It resembles some carbonates of lime in appearance, but is heavier, harder, and effervesces much more slowly in acids. It is very abundant, and occurs in veins, often of enormous thickness, in Westphalia, Styria, and in the province of Biscay in Spain.—D. T. A.]

457 Krimmelbein & Bredt, *Barmen*.

Samples of red prussiate of potash. Cyanide powder. Powder of royal blue. Composition for royal blue; and for porcelain blue. Extract of archil. Safflower carmine; indigo. Indigo extract. Prepared catechu. Pink salt. Stannate of soda. Bichloride of tin. Tin salt, pure. Tin powder; and muriate of ammonia.

[Archil, litmus, cudbear, are the names given to a purple dye, prepared by the joint action of air and ammoniacal salts, from various lichens, particularly the *Rocella tinctoria*. Safflower carmine (*Carthamine*) is obtained by washing safflower (*Carthamus tinctorius*) in water, until the yellow colouring matter is removed, then dissolving out the carthamine by a weak solution of carbonate of soda, and precipitating with dilute sulphuric acid. It is a fine red colour, and dries with a cantharides-green bronze: it is the colour sold dried in saucers, known as pink saucers. Catechu, is the dried extract of the tree *Mimosa catechu*, a native of India: it is sometimes called terra japonica: it contains a peculiar tannic acid, which differs from that obtained from nut-galls in some of its properties. Apart from its employment in tanning, catechu is used in combination with different metallic and earthy salts employed as mordants in dyeing. Tin salt is a compound of peroxide of tin and potassa (stannate of potassa), and is made by deflagrating tin with nitre.—W. D. L. R.]

458 Curtius, Julius—*Duisburg on the Rhine*.

Blue and green ultramarine. Used by printers, painters, &c., and for tapestry; they resist alum, and improve by exposure to the air.

459 Gutheil & Co., *Dusseldorf*—Producers.

Specimen of prussiate of potash (ferrocyanide of potassium).

460 Stohmann & Wüstenfeld, *Neusalzwerk, near Minden*—Manufacturers.

Chemical products from the mother-ley of the salt-works near Minden, chiefly combinations of bromine.

[Bromine was discovered by M. Balard, of Montpellier, in France, in the year 1826. He obtained it from the mother-liquors of the salt works in which sea-water was employed. It is an elementary substance, liquid at ordinary temperatures, of intense reddish-brown colour, and possessing a powerful odour; at about 13° below the zero on Fahrenheit's scale it solidifies to a crystallizing solid of laminated structure; and at about 116° it boils, giving off reddish-brown vapours. It bleaches vegetable colours, and colours starch of an orange tint; its compounds are, with some exceptions, termed bromides; the combination with oxygen, best known, is called bromic acid, and the combinations of bases with this acid are termed bromates.—W. D. L. R.]

461 Wesenfeld & Co., *Barmen.*

Samples of soda-ash, containing 99½ per cent. of carbonate of soda, for glass manufacturers; caustic soda, from the red mother-liquor of soda-ash, adapted for soap-boilers; chloride of lime, containing 30 per cent. of chlorine; antichlore, a preparation for neutralizing chloride of lime after bleaching; adapted for paper-makers.

["Antichlore" is sulphite of soda; that is, a compound of sulphurous acid and soda. In effecting its object, the sulphite of soda becomes converted into sulphate of soda, and the chlorine combines with hydrogen, and forms muriatic acid (hydrochloric acid), which may be neutralized by an alkali.—W. D. L. R.]

462 Horstmann & Co., *Horst, near Steele*—Manufacturers.

Samples of azure-blue smalt. Samples of zaffre.

[Smalt is a glass coloured with oxide of cobalt, and reduced to a fine powder: it is used for bluing writing and other papers; but the introduction of artificial ultramarine has considerably diminished its consumption for that purpose. Zaffre is an impure oxide of cobalt, obtained by roasting arsenical cobalt ores.—W. D. L. R.]

463 The Royal Alum Works, *Schwemsal, District of Bitterfeld.*

Refined and common potash-alum crystallized; containing only a small proportion of iron, and manufactured from native ores.

Sulphuric acid clay, known in trade under the denomination of aluminas; which contains but little iron; manufactured from native ores by exposure to the frost during the winter. Common and refined potash-alum crystallized; manufactured from native alum slate. Specimens of the alum schist, containing but little pyrites. Alum manufactured from alum schists, by simple exposure.

464 Mathes & Weber, *Duisburg on Rhine*—Manufacturers.

Muriatic acid, pure, 21° 1′, Beaumé, exempt from iron and sulphurous acid. Bleaching powder, or chloride of lime, 35 per cent. chloride. Sulphate of soda, 98 per cent. Soda crystals, nearly pure; soda ash, carbonate of soda, 58 per cent. dry carbonate; carbonate of soda, caustic soda, 60 per cent.

[Muriatic, or hydrochloric, acid is a compound of hydrogen and chlorine: under ordinary circumstances, it is a gas readily absorbable by water, but at a pressure of 40 atmospheres it is condensed to a colourless liquid. The aqueous solution is the muriatic acid of commerce, and is usually contaminated with iron and other impurities; 21° of Beaumé's hydrometer = 1·170 specific gravity.

Chloride of lime (hypochlorite of lime, oxychloride of calcium) is the well-known bleaching-powder. It is a mixture of hypochlorite of lime and chloride of calcium, which are soluble in water, and a variable excess of lime, which remains undissolved. It is obtained by exposing recently-slaked lime to chlorine gas, which is readily and largely absorbed.

Sulphate of soda is a compound of sulphuric acid and soda; it is manufactured in considerable quantities at the alkali works, as the first step in the production of soda from sea-salt. By the action of sulphuric acid (oil of vitriol) on chloride of sodium (common or sea-salt), muriatic acid is driven off in vapour, and an impure sulphate of soda remains: this may be purified by solution in water and crystallization therefrom. Formerly, the muriatic acid was allowed to escape, and very high chimneys were built to carry the destructive fumes high into the atmosphere; but of late they have been condensed by conducting them into chambers containing water, which absorbs the gas; and instead of wasting the acid, as formerly, it is now decomposed into its components, and the chlorine employed in the formation of bleaching-powder.

Carbonate of soda (common washing-soda) is a compound of carbonic acid and soda, and is termed soda-ash, crystallized soda, &c., according to the state it is sold in, commercially. It was formerly obtained, almost exclusively, from sea-plants, and was then largely imported into this country from Spain under the name of barilla; but now it is obtained from salt, and forms an important branch of manufacture in Great Britain. Sulphate of soda, obtained in the manner described above, is mixed with coal-dust and chalk or limestone (carbonate of lime), and heated to redness in a reverberatory furnace; the sulphuric acid of the sulphate of soda is decomposed, and the sulphur resulting therefrom unites with the calcium of the limestone, whilst the carbonic acid passes from the lime to the soda. The black mass is exposed to the action of water, which dissolves the carbonate of soda, and the saturated solution is evaporated to dryness; a crude soda-ash is thus obtained, which is purified for some purposes by re-calcination with coal-dust, re-solution, and re-crystallization; but it is likewise largely employed in the crude state.—W. D. L. R.]

465 Hesse Electoral Colour Manufactory, *Schwarzenfels, near Schluchtern*—Manufacturer.

Blue colours (smalt). Specimens of various blue colours. Strewing blue. Eschar and washing blue.

Violet smalts. Zaffers. Nickel, metallic, with calcined nickel. Nickel oxide. Nickel with ultramarine.

466 Schramm Brothers, *Neuss on Rhine*—Manufacturers.

Dressing-starch, for fine linen, cotton, and silk wares; burnt starch, in three qualities, for factories; pipe starch; ringed and powdered starch.

Raw material:—Wheat, of the first quality.

467 Rocholl, Theodor, *Minden*—Importer and Manufacturer.

Various samples of Havannah and Guajaquil cigars.

468 Carstanjen, Arn Friederich, jun., *Duisburg, near Dusseldorf*—Manufacturer. (Agent for London, Messrs. Mess & Co.)

Samples of tobacco, snuff, and cigars. The tobacco leaf is obtained from the East and West Indies and Wurtemberg.

469 Jaeger, Carl, *Barmen*—Manufacturer. (Agent, M. J. G. Behrends, 14 St. Mary Axe, London.)

Extract of safflower. Two bottles of safflower.

The extract is drawn from the pigment of safflower, and used to give silk, cotton, linen, paper, and artificial flowers a fine rose colour.

470 Elmendorf, E. F., *Isselhorst near Bielefeld.*

Samples of flax yarn and raw Ravensberg sand-flax.

471 Becker, F. A., Sapp, & Co., *Fredeburg*—Manufacturers.

Pieces of extraordinary sized amadou; best, middle, and common qualities of yellow and black amadou.

Caps with and without peak. The raw materials brought from Illyria.

[Amadou is prepared from a fungus, or species of mushroom, the *Boletus ignarius*, which grows on the old trunks of some trees, as the oak, ash, &c. The portion used is that underlying the outer bark, and overlying the ligneous matter: it is cut into thin slices and beaten; then boiled in a strong solution of nitre, and dried and beaten, and once more boiled in the nitre solution. Black amadou is impregnated with gunpowder. The fungus is useful in surgery for stopping hemorrhage.—W. D. L. R.]

472 Diepers, J. H., *Crefeld*—Manufacturer.

A machine, with forty reels, for twisting silk, half the usual size.

473 Piepenstock & Co., *Hoerde, near Dortmund*—Inventors and Manufacturers.

A tubular axle, with two disc wheels for railroad waggons.

474 Erdelen, Charles, *Elberfeld*—Manufacturer.

"Stays" for weavers, in wool, cotton, and silk. These stays are made of cast steel, and are preferable to reeds on account of their effect on the fabrics.

475 Uhlhorn, Ch. & Gerh., *Grevenbruch, near Dusseldorf*—Manufacturer.

Cards for combing silk, cotton, wool, and tow. Card sheets for main cylinder; fancy. Fillets; diamond point; oblique points. Rings. Sheets in row and cross-row stitch. Fillets; needle points. Rings; needle points. Fillets and sheets, diamond points.

The leather of these cards is obtained chiefly from Belgium and Germany; the iron wire almost exclusively from England, but a small part from France and Germany.

476 Uhlhorn, Henry, *Grevenbruch, near Dusseldorf*—Inventor and Manufacturer.

Three engines for coining, punching, and milling.

A coining-press for dollars.

A double-acting punching machine for dollars.

A fourfold-acting milling machine for dollars.

The raw materials from England and Germany. From 45 to 50 coins may be struck in a minute with a moving power equal to that of one horse.

477 Spangenberg, Sauer, & Sturm, *Suhl*—Manufacturers.

Finished double-gun, with all necessary apparatus, in case. The gun has bronzed damask barrels and percussion locks, with revolving safety stop, silver mountings; the ground gilt; the iron portion engraved, and inlaid with hunting-scenes on gold; the barrels are also ornamented with gold; the stock is carved: the case worked and inlaid, with a peculiar lock and silver-gilt handle, and bound with silver.

German silver ornaments and a powder flask of stag-horn, in style of the middle age, with all the usual appurtenances.

478 Schaller, Caspar, *Suhl*—Manufacturer.

Rifle, with cast-steel barrel, iron trimming; gold hunting piece, engraved; with iron spring lid; and a hunting scene carved on the stock. It is loaded at the stock, and has a contrivance for pointed bullets (*Spitz-kugeln*). A mould for pointed bullets; screw-drivers, with piston-key on one piece; brass case for cartridges; key for the sights; loading-measure of white copper; extra nipple.

479 Sauer, F. P., & Son, *Suhl*—Manufacturer.

A double-barrelled gun and single rifle. A single rifle, ornamented with silver, with all appurtenances, in case.

480 Schnitzler & Kirschbaum, *Solingen*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

A large collection of plain, polished, and gilt sword and sabre blades; infantry and cavalry swords, cutlasses, and sabres; officers' highly-finished swords, cutlasses, and sabres, with German silver and gilt mountings.

481 Pistor, G. & W., *Schmalkalden, Kurhessen*—Manufacturers.

Rifle for pointed balls, with barrel of German cast steel, complete.

Double guns, with Damascened barrels, patent screws, fine chain-locks, &c.; and with welded and patent barrels. Double and single-barrelled rifles, hunting and children's guns, Swiss and needle guns, pistols, &c.

482 Suess, W., *Marburg, Electorate of Hesse*—Manufacturer.

A very large thermo-electric battery, with an electro-magnet, a heating apparatus, for producing a chemical reaction.

[A thermo-electric battery is formed by soldering together bars of two dissimilar metals, for instance, antimony and bismuth alternately, and arranging them in a bundle, so that each alternate juncture may be conveniently heated whilst the other is cooled; a feeble electric current is produced, the direction of which is from the antimony to the bismuth. Such an apparatus, in conjunction with a galvanometer, was employed by Melloni in the discovery and investigation of the diathermatous (transparency to heat) properties of bodies.—W. D. L. R.]

483 Seel, H., jun., *Elberfeld*—Manufacturer.

Pharmaceutical apparatus and chemical utensils, including weights and measures, &c., of various sizes.

484 Schrödter, Emil, *Dusseldorf*—Manufacturer.

A silk-drying and weighing machine, and a machine for accurately ascertaining the weight of silk in bales, &c., by small samples, upon the Talabot system. This machine has a balance of extreme delicacy of adjustment.

A six-inch theodolite, with telescope magnifying 30 diameters; the limb is divided to twenty minutes, and subdivided by two verniers to half a minute. The vertical circle is divided to thirty minutes, and is read by one vernier.

The specimens of philosophical instruments exhibited will be likely to impress every visitor with the firm conviction that the art of Frauenhofer and Reichenbach are not forgotten in Germany. The German mathematical and physical instruments are in use everywhere, and German balances are extensively used in English laboratories. There are several very interesting inventions connected with the electro-magnetic telegraph.

485 Lampferhoff, J. & A., *Essen.*

New constructed solo clarionet. Solo flute. Military band clarionet.

[Solo is here used in contra-distinction to "military," there being peculiar clarionets and flutes used in concert for martial music. The "*solo*" clarionet, so called, is always used in *concert* for regular orchestral music.—H. E. D.]

486 Heitemeier, Theodor, *Münster*—Manufacturer and Inventor.

A patent table pianoforte, of peculiar construction.

487 Adam, Gerhard, *Wesel on Rhine*—Manufacturer. (Agents in London, Messrs. Mess & Co.)

Grand pianoforte on Erard's principle; oblique pianoforte.

488 Wiedemann, Pferdmenges, & Schmoelder, *Reydt*—Manufacturers.

Various samples of cotton spun yarn and twist.

489 Klöpper, Herrmann, *Wellentrup, near Oerlinghausen*—Manufacturer.

Piece of linen, made of hand-spun yarn, exhibited for durability, &c.

490 Bolten, J. W. Wilhelm, & Son, *Ruhrort*—Manufacturers.

Samples of woollen cloths:—Black doeskin, satin, drab doeskin, mixed grey, crossed-bar buckskin, doeskin, and black and white summer buckskin.

491 Braun Brothers, *Hersfeld, Hesse*—Manufacturers.

Pattern of a large carpet, called the "Prussian national carpet."

Woollen cloths—Light blue; dark green; dark blue; bronze cloth; and black cloth, satin de laine.

492 Teschenmacher, J. E., & Kattenbusch, *Werden-on-the-Ruhr*—Manufacturers.

Drab, mulberry, and American woollen cloth, with and without gloss; the raw materials from Silesia.

493 Johanny Abhoe, W. A., *Hückeswagen*—Manufacturer.

Various pieces of mulberry, green, bronze, and black woollen cloth. Black, green, and blue cashmere cloth.

494 Beeck (Van der), John Caspar, *Dusseldorf*—Manufacturer.

An assortment of square shawls, all woollen; long shawls. Cravats (mufflers). Woollen goods for ladies' dresses and cloakings. Assorted in various styles and patterns; exhibited for quality and novelty.

495 Wiese Brothers, *Werden-on-Rhur*—Manufacturers.

Four pieces of woollen cloth, manufactured from Silesian wool.

496 Schuremann & Schröder, *Lennep*—Manufacturers.

Samples of black cloth; the same twilled; mulberry and blue cloth, dyed in the wool.

497 Oelbermann, J. D., Sons, & Co., *Lennep*—Manufacturers.

Specimens of black and invisible-green woollen cloths.

498 Hilger Brothers, *Lennep, near Dusseldorf*—Manufacturers.

Samples of black twilled fine cloths:—Olive, bluish-green, and dark-brown; olive, dyed in the wool; violet and black.

499 Hueck, D. & A., *Herdecke-upon-Ruhr*—Manufacturers.

Various specimens of woollen cloth:—Dahlia, blue, and black.

500 Huffmann Brothers, *Werden-on-Ruhr*—Manufacturers.

Piece of fine black woollen cloth, made of Silesian wool.

501 Moll, Christian, *Hagen*. (Agent in London, Mr. John Henry Cohn, 3 Fenchurch Buildings, Fenchurch Street.)

Samples of woollen cloth, black, indigo wool-dyed, marine blue, and mulberry.

Raw materials from Saxony and Silesia.

502 Merten, John F., *Urdenbach, near Düsseldorf*—Manufacturer.

Moltongs and flannels. Striped flannel, blue, lilac, and green, blue and dark red, brown, green, and violet, violet and green, dark green and red, brown and light green. Striped moltongs. Made from German wools and English cotton yarn.

503 Schnabel Brothers, *Huckeswagen*—Manufacturers. (Agent, Charles Holland, 41 Finsbury Circus.)

Various specimens of blue and black woollen cloths.

[Various causes have combined to increase the production of woollen fabrics in the Zollverein of late years. Among these must be especially noticed the important improvements and extended encouragement that have taken place in the rearing of sheep. The introduction of improved machinery, engines, and processes, dating from the setting up of spinning machines within the Zollverein in 1817, by Cockerell. To these causes must be added the active enterprise that has been awakened in quest of new markets for our products, even in the remotest regions of the globe.

The plain and fancy woollens, cloakings, merinos, and Orleans flannels, of the German Zollverein, maintain a high repute, and, as well as its silks, velvets, and half-velvets, appear at the Exhibition in very great variety.]

504 Scheidt Brothers & Co., *Kettwig-on-Ruhr*—Manufacturers.

Six pieces of doeskin, black, military grey, marengo, light grey, and striped woollen cloth.

505 Scheidt, Joh. Wilh., *Kettwig-on-Ruhr*.

Specimens of black satin de laine; black doeskin de laine; grey satin and blue doeskin de laine;—all woollen.

506 Clarenbach, J. D., & Son, *Hükkeswagen*.

Samples of carded woollen yarn.

Patterns of wooden screws with flat, round, and square heads. The screws exhibited for the clearness and sharpness of the worm, or thread.

507 Feulgen Brothers, *Werden-on-Ruhr*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Woollen cloth:—Indigo blue cloth, dyed in the wool; merveille cloth; and black cloth—for the North German markets.

508 Forstmann & Huffmann, *Werden-on-Ruhr*—Manufacturers.

Three pieces of woollen cloths; black and green.

509 Diergardt, Frederick, *Viersen, near Crefeld*—Manufacturer.

Various specimens of black and coloured velvet, silk, and silk and cotton.

Moleskin (plush, for boys' caps); plush, for waistcoats; figured waistcoat velvet; and stamped waistcoat velvet, all silk and cotton.

Ribbons, of black and coloured velvet; and with stripes and coloured edges; of fancy velvet, with satin stripes; and fancy for hats, all silk. Figured velvet ribbons.

Fancy velvet, and figured velvet with satin, stamped velvet, and black figured velvet ribbons, silk and cotton.

Figured velvet ribbons, silk and cotton, with white borders.

Small stamped collars, silk and cotton.

Velvet collars, with printed satin stripes, all silk.

Printed velvet collars; fancy waistcoat velvet, with satin; and terry velvet, and silk and cotton.

Terry velvet silk plush and stamped velvet à jour, for ladies' bonnets, silk and cotton.

Brown stamped velvet scarf, silk and cotton.

Green stamped velvet scarf, with white silk lining, all silk.

Black satin stuff, silk, and silk and cotton, in pieces.

510 Duyn, Hipp, & Co., *Crefeld*—Manufacturer.

Silk for dresses and waistcoats.

Patterns of silk umbrella, parasol, and dress stuffs.

511 Stork, Peter, *Crefeld*—Manufacturer.

Silk goods:—Coloured and black silk. Superior satin. Silk and satin cravats. Shawls and waistcoats.

512 Kerkhoff (Van der), & Kreitz, *Crefeld*—Manufacturers.

Various silk stuffs for parasols.

513 Siebel, C. W., & Brinck, *Elberfeld*—Manufacturers.

Patterns of cord, gimp, ribbons, and other trimming.

514 Simons, Johann (Heirs of), *Elberfeld*—Manufacturers.

Shawls and silk wares. Silk shawls and scarfs. Ladies' neckerchiefs. Black sarcenet kerchiefs. Silk cravats; half silk cravats; ladies' cravats.

Waistcoats. Silk handkerchiefs (German web), (Indian web), and (imitation web). Silk velvet, and silk and half-silk stuffs.

515 Schroers, G. & H., *Crefeld*—Manufacturers.

Silk and velvet waistcoats. Fancy silk, fancy velvet, and plain velvet waistcoating. Exhibited for design and quality.

516 Rappard & Co., *Crefeld*—Manufacturers.

Assortment of silk cravats.

517 Rappard & Goesmann, *Crefeld*—Manufacturers.

Velvet and silk goods. Jacquard velvet; levant; carré; frappé. Jacquard satin.

518 Peltzer, Wilhelm, Sen., *Rheydt, near Crefeld*—Manufacturer.

Velvet, silk, and half-silk goods: Samples of velvet, satin, waistcoating, and satin cravats.

519 Hoeninghaus, C. W., & Son, *Crefeld*—Manufacturers.

A large assortment of fancy silk and velvet ribbons.

520 Hermes Brothers & Wolffer, *Crefeld*—Manufacturers.

Silk wares: silk for parasols; brocaded satin; figured satin; Jacquard figured satin; Jacquard satin. Armures satinés; brillantines canellis; jaspe broché; figuré; tartan satin; striped; quadrillé; tartan jaspé; brillantine une cuit.

521 Heidweiller, J. V., & Sons, *Crefeld*—Manufacturers.

An assortment of ribbons, silk, and silk and cotton; including black and coloured hat-bands, black and coloured edgings, and worsted braid.

522 Neuhaus, H. J., *Crefeld*—Manufacturer.

An assortment of coloured and printed silks.

523 Neviandt & Pfleiderer, *Mettmann, near Elberfeld*—Manufacturers.

Coloured silk aprons. Black and coloured silk handkerchiefs for gentlemen, and fringed and other fancy handkerchiefs for ladies.

524 Jacobs & Bering, *Crefeld*—Manufacturers.

Silk, satin, and damask umbrella stuffs.

Silk parasol stuffs.

Specimens of taffety.

525 Kaibel, John, *Crefeld*—Manufacturer.

Specimens of silk and satin goods. Specimens of black armures, printed poult de soie Ecossais, and figured shot satin de Chine; and armures.

Striped and printed gros de Naples; the same printed and shot.

Striped and printed taffety.

Satin de Chine for parasols, with printed borders.

Shot satins for parasols, with figured borders.

526 Lingenbrink & Vennemann, *Viersen*—Manufacturers. (Agents in London, Messrs. Walter and De Vos.)

Specimens of black and coloured velvet, and black and coloured velvet ribbons.

527 Krauhaus & Kauertz, *Crefeld on the Rhine*—Manufacturers.

Specimens of satin goods. Fine black satin and cotton mixture; crimson, and blue; black.

Satin for dresses; fine black satin.

Black plain and fine satin, all silk.

The plain satins, formerly made of silk, have of late been made of satin mixed with cotton, for the cheap markets.

528 Knuepfer & Steinhauser, *Greiz (Reuss)*—Manufacturers. (Agent in London, Charles Holland, 41 Finsbury Circus.)

Specimens of Thibet, French blue, satin d'Espagne, grey satin berber, and satin rayé vert.

529 Ter Meer & Co., *Crefeld*—Manufacturers.

An assortment of silks for dresses and waistcoats, and various silk stuffs for parasols. Twilled silk with satin stripes for umbrellas.

Various sorts of black and twilled taffety.

530 Menghius Brothers, *Viersen, near Crefeld*—Manufacturers.

Various specimens of smooth and pressed silk and terry velvet, of different colours, and moleskin and stamped velvet.

Different coloured silk ribbons.

531 Lumm, J. W., & Ruetten, Von, *Crefeld*—Manufacturers.

Silk goods and fancy Scotch stuffs of various descriptions.

532 Morgenroth & Krugmann, *Elberfeld*—Manufacturers.

Various specimens of velours d'Utrecht, half woollen and coloured velvets, including purple, royal blue, claret, green, crimson, embossed cérise, and violet for furniture, carriage linings, roleaux, &c.

533 Greef, Fr. Wm., *Viersen*—Manufacturer.

Silk for umbrellas and parasols.

Patterns of silk and silk velvet and satin, for dresses and waistcoats.

An assortment of cravats. Silk plush for hats and caps.

534 Scheibler & Co., *Crefeld*—Manufacturers.

Watered silk, fancy velvet, and terry velvet ribbons; plain and narrow fancy ribbons, fringed; pressed velvet scarfs; fancy velvet ribbons. Smooth velvet and velvet ribbons.

Silk velvet, plain and stamped; plain terry silk velvet.

Black silk plush for hats; coloured plush for caps.

Watered silk, with satin stripes.

Striped and glazed silk for ladies' dresses.

Taffety of various colours, sarcenet for lining; red and black atlas.

Black silk for waistcoats.

535 Bruck, H. von, & Sons, *Crefeld*—Manufacturers.

Fine black and coloured ribbon velvets, all silk.

A variety of fancy and figured silk ribbon velvets, for bonnets, neck-ties, trimmings, and other purposes.

Plain silk broad velvets.

Fancy silk velvet vestings.

536 Bovenschen, H., & Co., *Crefeld*—Manufacturers.

An assortment of glacé silk used for ladies' dresses; exhibited for colour, design, and quality.

537 Gerlich & Greiff, *Elberfeld*—Producers.

Spun-silk buttons of various qualities.

Figured velvet; satin corded; double warp; and English corded.

The stuff buttons woven of sewing silk and organzine, and seamed all over the button-moulds.

538 Grote, H. G., *Ronsdorf, near Elberfeld*—Manufacturer.

Black and dark blue silk ribbons. Silk and cotton hatbands, and bindings for shoes, ladies' cloaks, aprons, and dresses

Linen and woollen coat-bindings. Cotton tapes.

Braids of silk, mohair, wool, and cotton (white).

Cords and tassels of silk, silk and cotton, mohair, and wool.

539 Brockmann, Friedrich, *Wellentrup, near Oerlinghausen, Lippe Detmold*—Manufacturer.

Piece of grey linen. This linen is made of hand-spun yarn, woven by hand, and is exhibited for durability. It is made by hand weavers, and bought from them at Oerlinghausen by the merchants, and after being bleached is exported to almost all parts of the world.

540 Velhagen, W. R., *Bielefeld*—Manufacturers.

Samples of bleached linen and white linen pocket-handkerchiefs, made from hand-spun yarn.

541 Müller, Joh. Gisb., *Marl, near Recklinghausen*—Manufacturer.

Woven linen damask table-cloths, with damask table-napkins, with the arms of Count Westerhold, Baron Wolf Metternich, quartered with those of Count Hompesch; and of the Baron of Böselager, quartered with those of Baron Wolf Metternich's.

542 Wessel, F. W., *Spenge, near Bielefeld*—Manufacturer.

Specimens of raw and bleached linen and handkerchiefs, made of hand-spun Westphalian flax.

543 Westermann, A. H., & Co., *Bielefeld and Cologne*—Manufacturers. (Agent in London, Mr. P. Amsel, 20 Providence Row, Finsbury Square.)

Various samples of white bleached linen, manufactured from flax, spun by hand, woven on hand-looms, and bleached on grass.

544 Westermann, A. H. C. & Sons, *Bielefeld*—Manufacturers.

Samples of bleached and raw linen. Bleached cambric handkerchiefs. Damask table-cloths with napkins; drilling and bleached table-cloth. Damask and drilling towels.

Raw and white table-cloths and napkins, with the royal arms of Wurtemburg; of Mecklenburg Schwerin; of Hanover; and of Nassau.

Bleached damask table-cloth.

545 Schwemann, G., St., & Sons, *Lippstadt*—Manufacturers. (Agent, W. Meyerstein, 15 Watling Street, City.)

Various samples of twine, hand-spun. Exhibited for cheapness and quality.

546 The Spinning School, *Heepen, near Bielefeld*—Manufacturers.

Samples of flax yarn, spun by hand.

547 Doebel, Heinrich Julius, *Halle on the Saale*—Manufacturer.

Bell-ropes and ladies' pockets of New Zealand hemp. Pressing cloth without seam, used in sugar manufactories. The raw machine yarn is from Leeds.

548 Delius & Sons, E. A., *Bielefeld*—Manufacturer.

An assortment of hand-spun bleached linen and linen handkerchiefs. Exhibited for the quality of the flax, the workmanship, and the result of the process of bleaching.

549 Eickholt, Antony (Heirs of), *Warendorf*—Manufacturers.

Various bleached linen table-cloths, napkins, and pieces of linen.

Brown and white linen, damask table-cloths and napkins, with wreaths of flowers, view of Stolzenfels, a hunting scene, and a table-cover of silk with views of Walter Scott's monument, the cathedral of Cologne, Stolzenfels, &c. Napkins with the coats of arms of several families.

550 Landwehrmann, Brothers, *Joellenbeck, near Bielefeld*—Manufacturers.

Specimens of bleached and raw linen, made of hand-spun Westphalian flax, exhibited for durability and quality.

551 Ollerdissen, Peter, *Uerentrup, near Bielefeld*—Producer.

Samples of Bielefeld gray and yellow, and cambric flax.

552 Koenigs & Buecklers, *Dülken, near Dusseldorf*—Manufacturers.

Flax, thread, cord, staves for weavers, and specimens of varnished oil-cloths for covering railway carriages. Samples of German flax.

Linen thread for weavers' leashes. Linen cord for Jacquard machines.

Reed staves for cotton and silk. Patterns for paper and imitation of oil-cloth.

Steel wire for weaver's reeds.

553 Kisker, Wilhelm, *Halle, near Bielefeld*—Manufacturer.

Samples of sail-cloth. Raw materials, both warp and web, of Westphalia. Spun hemp.

554 Hoerkens, H., *Lubbecke, near Minden*—Manufacturer.

Samples of twine and cord for packing.

555 Heidsick, L. Aug., *Bielefeld*—Manufacturer.

Specimens of bleached linen, and handkerchiefs, made of hand-spun yarn, and exhibited for fabric and durability.

556 Kroenig Fried., Wilhelm, & Sons, *Bielefeld*—Manufacturers.

Samples of raw linen, of best hand-spun flax yarn.

557 Mevissen, Gerhard, *Dülken, near Düsseldorf*—Manufacturer.

Thread and raw flax. White thread for embroidering. Patent white thread; black thread. Glazed black thread. Balls of crochet thread.

The threads are made of German and English machine-spun and German hand-spun yarns. The flax is grown in the Rhine Province, county of Düsseldorf, and Aix-la-Chapelle.

558 Schnelle, J. H. & Sons, *Bielefeld*—Manufacturers.

Specimens of fine white linen yarn, made of the best German flax, spun by hand; exhibited for strength and durability.

Samples of threads of warp.

[The exports of linen productions from the Zollverein exceeded the importations, in 1842, by a quantity equivalent in value to 14 millions of thalers, those of cotton productions by 13 millions of thalers, of silk and half-silk goods by 6 millions and a half of thalers.

But since the above-named period a gradual decrease has been observed in the exports of linens, accompanied by an increase in those of manufactured fabrics.]

559 Bruenger, Albert, *Joellenbeck, near Bielefeld*—Manufacturer.

Samples of bleached linen, Raw materials, hand-spun Westphalian flax. Linen, exhibited for fineness, fabric, and durability.

560 Delius, John Daniel, *Bielefeld*—Manufacturer.

Samples of bleached linen and linen kerchiefs, spun by hand and machine.

561 Blankenburg, Friedrich, & Co., *Lippstadt*—Manufacturer.

Samples of twine and cord of various threads.

Raw materials: hemp from the neighbourhood of Lippstadt and Italy. The hemp imported from Italy is softer and of a lighter colour, but not stronger than the German.

562 Bolenius & Nolte, *Bielefeld*—Manufacturers. (Agents, Richards & Co., 45 Bread Street, City.)

Samples of linen yarn, bleached linen, and bleached linen drill; cambric lawn, bleached and printed; linen pocket handkerchiefs.

563 Gante, C. F., & Sons, *Bielefeld*—Manufacturers.

Specimens of bleached linen, all home-woven, and made of hand-spun flax.

564 Trappmann & Spitz, *Barmen*—Manufacturers.

Specimens of stuff buttons. Gimped buttons, manufactured partly of twisted silk and trams, which are received from Italy and the East Indies, and partly of a mixture of silk, wool, and cotton.

565 Woelfing & Windrath, *Elberfeld*—Manufacturers.

Various sorts of cotton tapes, ribbons, cords, and cotton and worsted laces.

566 Zollmann & Steigerthal, *Leichlingen, near Opladen*—Manufacturers.

Cotton and half-cotton and woollen goods, including Jacquard and Berlin dresses; the materials of these dresses are wool and English twist.

Jacquard dresses, produced of wool and English twist; the Jacquard Berlin dresses are entirely of cotton.

567 Haarhaus, J. C., and Sons, *Elberfeld*—Manufacturers.

Samples of shawls and stuffs for ladies' dresses, of silk, wool, silk and cotton, silk and wool, wool and cotton, and cotton.

568 Pluecker, Moritz, *M. Gladbach*—Manufacturer.

Shawls of wool and silk; and of wool and cotton.

569 Weber & Metzges, *Gladbach*—Manufacturers.

Specimens of pique waistcoating and waistcoating in wool and cotton. Raw materials for pique, from England; the other stuffs consist of fine wool and silk.

570 Weyerbusch, C., & Co., *Elberfeld*—Manufacturers.

An assortment of silk and woollen stuffs for buttons, and covered buttons for various purposes.

571 Engelmann, Chr., & Son, *Crefeld*—Manufacturers.

A variety of shawls, and black silk for dresses and parasols.

572 Funke, J. H., Boeddinghaus, & Co., *Elberfeld*—Manufacturers.

Silk and half-silk goods:—Romals à franges. Cravat with brocaded striped tie. Greek slips. Crav. Anglaises. Summer cravats, and other varieties. Taffetas à Co. B. Russes. Gros grains, croisées glacées, damiers glacées. Françaises. Atlas jacquards. Taffetas. Arabic aprons. Shawls:-Satin shawls, Jardinières, damassés noirs, glacées, noirs. Esmeralda. Arabes glacées. Corahs. Fancy waistcoatings. Jet black satin.

573 Pferdmenges & Kleinjung, *Vierssen*—Manufacturers.

Stuffs for trousers and waistcoats. Various specimens of fancy cashmeres, dark and light. Satin checks. Plain, striped, and twilled and checked satin. Buckskin, wool and cotton. Stuff for trousers, linen and wool, and wool and cotton.

574 Pferdmenges Brothers, *Gladbach*—Manufacturers.

Silk and half-silk and cotton goods. Specimens of cassinets, elastiques, satin turk, and figure, Madras uni. Lutestring watered and striped, and gros de Berlin.

575 Heymann, Charles, and Co., *Crefeld*—Manufacturers.

An assortment of fancy waistcoatings and fancy silk handkerchiefs and cravats.

576 Langenbeck & Martini, *Elberfeld*—Manufacturers. (Agent, W. Meyerstein, 11 Watling Street, City.)

Specimens of buttons and braces of silk and lasting.

577 Neuhaus, Ludwig, *Betterath, near Gladbach*—Manufacturer.

Cotton, and silk and cotton goods. Samples of cotton waistcoatings; dimity; silk; and cotton and silk.

578 Klein-Schlatter, Chas. Frederick, *Barmen*—Manufacturer. (Agents in London, Messrs. F. Huth & Co.)

Cotton, and cotton and wool shawls.

579 Lamberts, M. & May, *M. Gladbach*—Manufacturers.

Specimens of cotton beaver and drill; cotton and wool cassinet. Cheap, and adapted for the working classes.

580 Rurmann & Meckel, *Elberfeld*—Manufacturers.

Various shawls, waistcoatings, and ladies' dresses; including shawls, cotton; cotton and worsted, silk, worsted, woollen, and cotton and woollen.

Waistcoating of cotton and silk; ladies' dresses of cotton and silk.

581 Mengen, Christian, *Vierssen*—Manufacturer.
Samples of velvet and half-woollen stripes. Canvas for embroidery; silk and woollen.

Furniture and carriage covering; horse-hair stuffs for the same, and petticoats.

582 Meyer & Engelmann, *Crefeld*—Manufacturers.
Silk scarfs and aprons, including satin checked, watered checked, and taffetas. Aprons, fancy watered, in fine black satin, and in green, violet, royal blue, brown, dahlia, shot, &c. Made in various qualities and different sizes, from Italian silk.

583 Neitzer & Brabant, *Vierssen, near Crefeld*—Manufacturers. (Agent in London, Mr. George Ems, 28 Swan Chambers, Gresham Street.)
Stuffs made from silk, cotton, and linen, including union poplins, Turkish poplins, Persian handkerchiefs, plain and fringed, &c.

584 Lühdorff, J., & Co., *Elberfeld*—Manufacturers.
Shawls, stuffs, and waistcoating. Llama wool shawls. Unions, with silk and barège; half-woollen cloaking; waistcoat stuff; half woollen, and with silk. The half woollen articles are made from double warps.

Turkey-red and rose-coloured twist; red water twist. Yarns of various colours and fineness, spun in England, and dyed by the exhibitors.

585 Schmits & Holthaus, *Elberfeld*—Manufacturers. (Agent, Messrs. Gebhardt, Rottmann & Co., 29 Wood Street, Cheapside.)
Stuff, in divers colours, for coverings of tables, coaches, furniture, &c. Silk and linen damask.

586 Bockmüehl, Peter E., *Elberfeld*—Manufacturer.
Various specimens of silk and cotton neckcloths, ladies' shawls, barèges, fancy plaids, and waistcoating.

587 Funke, Robert, *M. Gladbach* — Manufacturer. (Agents in London, Cooper & Blagg, 44 Friday Street.)
Cotton, cotton and silk, wool, and linen goods used for ladies' dresses.

Samples of Victorias, China crape, and toile du nord, all cotton and wool.

Pocket handkerchiefs, cotton and silk. Diamond cotton, demi-lin, cotton and linen; Germania and soie, cotton and silk.

Gloria, silk and wool. China cotton; cotton and wool; silk and cotton; and silk and wool.

588 Lorentz, Friedrich, *Gladbach*—Manufacturer.
Half-wool and cotton wares, consisting of half-woollen elastic, cassinet, and buckskin, and waistcoat pieces. The half-cottons, exhibited for cheapness and design; the waistcoats, for cheapness and durability.

589 Schmidt & Co., *Barmen*—Manufacturers. (Agents in London, Messrs. Graetzer & Hermann, 9 Huggin Lane, Wood Street.)
Silk bands, and silk and wool laces and cords.

590 Greeff, Bredt, & Co., *Barmen*—Manufacturers.
Silk, mohair, and gambroon buttons and button-stuff.

Specimens of plain and fancy silk buttons; specimens of stuffs for covering buttons.

591 Grafe & Neviandt, *Elberfeld*—Manufacturers.
Various specimens of cashmere waistcoating.

592 Graff, Philipp, *Siegen*—Producer.
Samples of cobalt ore and cobalt blue, from Philipp Hoffnung, near Siegen.

Bright white cobalt (cobalt glance), crystallized in microscopical forms, and diffused in slate, greywacke, quartz. The crystals contain:—

Cobalt . . .	29·77
Sulphur . . .	19·10
Arsenic . . .	44·75
Iron	6·38

A large number of smalt factories obtain their finest colours from this ore. The first quality produces 29 per cent. of oxide of cobalt, and the second 22.

[The colouring matter of intense blue, used in the arts under the name of smalts, and producing cobalt blue, Thenard's blue, and other pigments, invaluable in all colouring which has to stand the action of fire, is obtained from an impure oxide (*Zaffre*) derived from some ores of cobalt, of which that called tin-white, or grey cobalt, cobalt glance, cobaltine, &c., is the principle. This ore is an arsenio-sulphuret ($\mathrm{Co\,As^2 + Co\,S^2}$), and is remarkable for the extremely perfect and beautiful crystals in which it is often found, and which in some respects resemble iron pyrites. The principal localities of the mineral are Tunaberg, in Sweden, and some localities in Germany. It occurs also in Connecticut, North America.—D. T. A.]

593 Schulz, Charles, *Essen*—Inventor, Manufacturer, and Importer. (Agents in London, Messrs. S. Cahn & Co., 3 Copthall Chambers, Copthall Court, City.)
Varnished leather for caps, shoes, and hats.

Walking-sticks and sword-canes of whalebone. Manilla dragon-canes; Malacca canes; and common walking-sticks.

594 Reineke, C., *Horn, Lippe*—Inventor and Manufacturer.
Side-saddle, with arms, and two elastic stirrups, to allow the rider to move and turn about with ease. An umbrella belonging to it.

595 Klems, Johann Bernhard, *Dusseldorf*—Manufacturer. (Agent in London, Mr. Fr. Klein, 38 Finsbury Square.)
A grand piano, after Erard's Paris model; this adaptation of that principle is stated to require less strength in performance, an additional iron spreading bar being placed above the strings in the lower bass, to give a greater counter pressure.

596 Fudikar, Herrmann, *Elberfeld*—Manufacturer.
Horse-hair, with silk and cotton for upholstery.

Divers sorts of horse-hair upholstery.

Coverings of horse-hair, black and white; red; black, with blue silk; side-part hair and red silk,; and white and blue.

Chair-cover, white horse-hair with red silk; red and yellow silk.

Velours d'Utrecht; the same, striped.

597 Ruhl, Peter, & Son, *Hesse-Cassel*—Manufacturers.
An assortment of pasteboard boxes.

A series of embossed envelopes; a series of printed envelopes.

Patterns of coloured paper.

598 Hoddick, William, *Langenberg*.
Specimens of dyed jet-black silk, exhibited for brightness, purity, and colour.

599 Westhoff Brothers, *Dusseldorf*—Manufacturers.

Specimens of printed calicoes. The raw materials are from England; 24 warps and 28 wefts are used; the madders from Holland: exhibited for cheapness and durability.

600 Wolff, Johann Friedrich, *Elberfeld*—Manufacturer.

Samples of Turkey-red cotton yarn.

601 Trost, C. & F., *Louisenthal, Mülheim on the Ruhr*—Manufacturers.

Specimens of printed calico of various patterns on a red and indigo ground. Manufactured from English yarn, on hand-looms in Westphalia, but printed and finished in Louisenthal. Exhibited for durability and colour.

602 Turkey-Red Dyeing Company, *Hagen, near Elberfeld*—Importers and Manufacturers. (Agent in London, Mr. John Henry Cohn, 3 Fenchurch Buildings, Fenchurch Street.)

Various samples of Turkey-red cotton yarns, of different sorts and shades from light to dark.

Printed calicoes in various colours.

Raw materials, as warps and cops for the cottons, chiefly from England.

603 Neuhoff, John Henry, *Elberfeld*—Dyer.

Turkey-red yarns, including double extra, medium, and mule, best dye twist.

Good water and mule middle pink.

The yarns are spun partly in England and partly in Germany.

604 Lamberts, Antony Christian's Son, *M. Gladbach*—Manufacturers.

Specimens of brown cotton Kalmuck; black, green, buckskin, and mixture, Kalmuck.

Brown, black, and variegated beaver. Pressed beaver.

605 Lupp & Sons, *Dusseldorf*—Importers and Manufacturers.

Printed calico and coloured woven calico goods. Indigo dye; calico shot; calico ribs; calico with satin; chequered calico.

Napolitaine, with wool; furniture, cotton, piqué, and dimity; kerchiefs; plaids; printed kerchiefs and slips; printed calicoes.

The raw materials are from England and Germany; the cottons printed by machinery, the other articles are woven and worked by hand.

606 Bockmoehl Brothers, Schlieper & Hecker, *Elberfeld*—Manufacturers.

Patterns of printed calicoes, various colours, including rose, lilac, green, blue, orange, garancine, black, and white.

607 Brinck, J. W., *Gladbach*—Manufacturer.

Coloured cotton yarns. Turkey-red, of various shades. The raw material for spinning from England.

608 Schoeller, Aug. & Ferd., *Elberfeld*—Manufacturers.

Various samples of Turkey-red yarn. Specimen to show the process of dyeing in its various stages.

609 Croon Brothers, *Gladbach*—Manufacturers.

Specimens of cotton beavers; specimens of printed calmuc, beaverteen, cassinet, cotton and wool, and buckskin.

610 Cramer, L. & G., *Dusseldorf*—Manufacturers.

Printed cottons and stuffs.

Gingham and twilled union.

Twilled nankeen.

Furniture stuffs of various colours, including blue, red, lilac, and white.

611 Sartorius, A., & Co., *Dusseldorf*—Manufacturers.

Samples of rose, fancy-coloured, and Turkey-red yarn, for the Indian market.

612 Dieckmann, W. & C., *Elberfeld*—Manufacturers.

Woven goods:—Portraits of the King and Queen of Prussia, woven in silk, in gilt frames, of various sizes.

Embroidered waistcoats, woven in wool, cotton, and silk; the same, Natal web, in wool, cotton, and silk.

Cashmere and Valencia waistcoats, woven in cotton, wool, and silk.

613 Rups, Louis, *Crefeld*—Manufacturer.

Silk hats, with felt shape and form.

614 Erbschloe, Frederic William, & Sons—*Luttringhausen, near Elberfeld*—Manufacturers.

Specimens of refined German steel, of various qualities, and tools. Cards, with fifteen samples of refined German steel files and rasps, planes and chisels, gun spring, bayonet, ramrod, and cut steel.

615 Post, John D., *Wehringhausen, near Hagen*—Manufacturer.

Cutlery and hard wares:—Cutlass blades, sword blades and sabres. Table-knives and forks. Scythes. Straw-knives.

Pieces of steel. Hoe. Hatchets and axes. Adze.

Hammers. Chopping-knives. Sickles.

Drawing-knives. Trowels. Braces. Saws.

Anvils for silversmiths. Bench-vices. Scale-beams. Steel-yards. Shop-scales.

Door-locks. Coffee-mills. Gimlets. Chisels. Plane-irons. Files.

Compasses. Pliers and nippers. Hand-vices. Pincers. Stock and dies.

Saw-sets. Turn-screws. Cupboard-locks. Bolts. Sheep-shears.

616 Post's, J. C., Sons, *Eilpe, near Hagen*—Manufacturers.

Specimens of cast scissors.

617 Mannesmann, A., *Remscheid*—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Files, screws, and steel. Raw materials:—Prime Siegen rough steel, manufactured in Remscheid.

618 Pluemacher, W., *Wald, Solingen*—Manufacturer.

A great variety of scissors.

619 Pickardt, G., *Remscheid*—Manufacturer.

A variety of files and rasps, manufactured of cast, refined, and double-refined steel.

620 Brand, P. W., *Remscheid*—Manufacturer.

Specimens of saws. Mill, crane, pit, cross-cut, "dwas," and "paunsch;" pit, Paris form, veneer web; circular, lock, and web; tram Paris form; tenon and American blue-polished quellon, and polish teeth, blue; trunk; wood, Berlin form; butcher; spring and butcher, blue; blade; dark; and lock, with handle.

621 Braunschweig, J. A., *Remscheid*—Manufacturer.

Various sorts of carpenters' and coopers' tools, planes, chisels, pickaxes, &c.

622 Reinshagen, G., *Remscheid*—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Various files of German steel.

623 Bleckmann, John Elias, *Ronsdorf*—Manufacturer.

Specimens of scissors, shears, files, rasps, vices, hammers, brace-bits, compasses, gimlets, trowels, chisels, gouges, saws, pliers, pincers, &c.

Rim locks, mortice, till, trunk, and padlocks.

Tinmen's tools, various. Skates.

624 Thomas, Christian, *Büchel, near Remscheid*—Manufacturer.

Augers and hardwares. Square rule.

Various sorts of augers and saddlers' knives.

625 Felde, Richard, *Feld by Remscheid, near Solingen*—Manufacturer.

Specimens of polished steel saws: of unhardened sheet cast; double refined; double refined and hardened; with yellow and blue teeth of double refined; of yellow, double refined; unhardened; blue, hardened, of double refined; hardened, of double refined, with blue teeth; best tempered, and of double sheet; and unhardened, of double refined.

626 Arns, August, *Remscheid*—Manufacturer.

Various carpenter's tools, including planes, chisels, &c.

627 Ante, Anton, *Zuschen, near Brilon*—Manufacturer.

Various axes and hatchets. Chaff-cutter.

Raw materials:—Styria steel for chaff-cutters, axes, and hatchets. Cut steel, raised in the county of Siegen, Rhine-Prussia, for grubbing.

Axes, broad axes, &c.

628 Cöppel, Alexander, *Solingen*—Manufacturer.

Various specimens of cutlery, including pen, pocket, spring, clasp, and hunting knives.

629 Linder, Benjamin, *Solingen*—Manufacturer.

Assortment of pen and pocket knives.

630 Lohmann, F., *Witten on Ruhr*—Manufacturer. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Files and cast steel; pig iron, employed in producing steel; pig iron, cast into bars and decarbonised whole and converted into steel; bars of steel; files made of steel to show the quality of the steel; steel recast and made into cast-steel; files made of cast-steel.

In producing this steel, the process of puddling and refining is avoided; the bars are decarbonised whole, without altering the shape; the invention is founded upon the experiments of Réaumur, and called by the inventor "steel adoucé."

631 Hilger & Sons, Luckhaus & Guenther, P. C. Luckhaus & Co., and J. B. Hasenklever & Sons, *Remscheid*—Manufacturers.

Carpenters', joiners', coopers', gardeners', and other tools.

Pen, pocket, hunting, and other knives; scissors, shears, scythes, saws, and other cutlery.

A large assortment of hardwares, including coffee mills, sugar-tongs, nut-crackers, scales, screws, bolts, files, piano hooks, tuning hammers and forks, vices, crimping-tongs, pincers, &c.

632 Huth, Fried., & Co., *Hagen*—Manufacturers.

Samples of steel, ore, cemented, puddled, refined, and raw iron and cemented steel; samples of specular iron, and hard wares; including cast-steel files, carpenters' tools, various vices, and anvils.

633 Boecker, R. & H., *Remscheid*—Manufacturers. (Agent, Oscar Frauenknecht, 80 Bishopsgate Street Within.)

Hardware and cutlery.—Files, rasps, pincers, bits, gimlets, &c. Locks, scale-beams, bolts, and skates; shears, saws, vices, trowels, screw-drivers, hinges, rings, knobs, &c. Knives, scissors, sugar-tongs, nut-crackers, wire gauges, &c.

Patterns of drawing, chopping and cooper's knives, cleavers, saws, scythes, &c.

[The flourishing state of the German cutlery trade, of which the principal seats are in Westphalia and the Rhenish provinces (as Solingen, Remscheid, and Hagen), is continually enlarging itself. The Zollverein exports yearly immense quantities of this hardware to America, through which it is dispersed from almost all the Transatlantic harbours.]

634 Wescher Brothers, & Strasmann, *Barmen*—Manufacturers.

Specimens of horn buttons; sporting and dress buttons. The materials used in the manufacture are the hoofs of oxen.

635 Nottebohm & Co., *Ludenscheid*—Manufacturers.

Samples of cast brass, and German silver door handles, rings, screws, rollers for chairs, bedsteads, and other articles.

636 Turk, C. P. (Widow), *Lüdenscheid*—Manufacturer.

Specimens of steel, German silver, plated, and gilt buttons, buckles, and nails, for upholstery.

637 Hoeller, A. & E., *Solingen*—Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Sword of honour, and court-sword, in case. Gloves, swords, and hangers. Mounted foils and rapiers.

Damask blades in the oriental style. Blades of swords, and foils. Matchetts and cutlasses. Lance blades.

Scissors; the same, in case. Pen and pocket knives. Table knives and forks.

Carving knives and forks. Razors. Poniards. Spear-pointed knives. Shoemakers' and butchers' knives. Table-knives.

Sheep and tin shears. Saws and saw-blades. Files. Chisels and plane knives. Stocks and dies. Tongs, nippers, and wire-plyers.

Compasses and dividers. Brace-bits and gimlets. Hammers and jewellers' tools. Hinges. Locks.

Parallel-vice, in case. Halter-chains.

Steel ornaments, for porte-monnaies, porte-cigars, and bags.

638 Dreyse & Collenbusch, *Sömmerda*—Manufacturers.

Specimens of percussion-caps, in which certainty of ignition is obtained by protecting the priming from wet or moisture.

Tin-plate, barrel, and copper rivets produced by machinery without heat, and exhibited for cheapness.

639 Ritzel, Widow Leonhard, *Lüdenscheid, Westphalia*—Manufacturer.

Various metallic buttons. Copper obtained from England, Sweden, and Germany. Zinc from Rhine provinces and Silesia.

640 Schwarte, J. D., *Solingen.*—Manufacturer.

An assortment of razors, pen-knives, chatelaine hooks and swivels.

641 Dültgen Brothers, *Dültgenthal, near Wald*—Manufacturers.

Hard wares. Umbrella and parasol frames, &c.

Samples of cigar-boxes, porte-monnaie frames, &c.

Pad and portfolio locks, and door-handles.

642 Altenloh, Brink, & Co., *Milspe, near Schwelm*—Manufacturers. (Agent in London, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Various specimens of screws, with round and flat heads.

643 **Schlegelmilch, Carl**, *Suhl*—Manufacturer.

Box for matches, made of rolled sheet-iron, to show the quality, toughness and pliability. The lid opens by pressure along the length.

644 **Schmidt, Caspar**, *Soest*—Manufacturer.

A middle-sized cooking apparatus of plate iron.

645 **Asbeck, Charles, & Co.**, *Hagen*—Manufacturers.

Vices, anvil, horse-shoes, and hardwares; locksmith's anvil, turning-lathe, parallel vice and table vice, exhibited for cheapness.

Specimens of refined German steel, made of Siegen steel ore.

Horse-shoes of half-hardened steel.

Tools for shoeing horses, consisting of rasps, hammer, and pincer.

Variety of padlocks and fodder knives.

646 **Schmidt, Pet. Ludw.**, *Elberfeld*—Manufacturer.

Steel, iron, and brass wares, including screw-taps, files, gimlets, nippers, hammers, vices, shears, plane-irons, saws, locks, scales, hinges, taps, and skates, &c.

647 **Kissing & Moellmann**, *Iserlohn*—Manufacturers.

Brass and iron wares, including gilt stamped mirror-knobs, escutcheons, and ornamental drawer-rings.

Card counter plates and snuffer-dishes.

Brass knobs, hooks, and drawer-rings. Chair-rollers. Hand-bells. Dial plates, &c.

Curtain cornices, ornaments, pins, and rings.

Parasol frames. Stamped brass candlesticks.

Steel umbrella and parasol frames, with and without japanned handles. Reels of iron, copper, and brass wire.

648 **Hoesterey, G.**, *Barmen*—Manufacturer.

Samples of buttons, plated with gold, silver, and platina.

649 **Krupp, Friedrich**, *Essen, near Dusseldorf*—Manufacturer and part Inventor.

Rolling mill for mints. The rollers, 8 inches in length and diameter, are hardened, exhibited for equal hardening, purity, and durability.

Carriage and buffer springs. Railway-carriage axles.

Forged cast-steel containing a small quantity of carbon; exhibited for purity and toughness. Used for axletrees for locomotives, waggons, &c.; gun and carriage, cast-steel cuirass, breast-plates.

650 **Lucas, F. W., & Co.**, *Elberfeld*—Manufacturers.

An assortment of hardware, consisting of imitation bronze goods in lead, tin, and zinc; altar and other candlesticks, inkstands, match-boxes, lamp-screens, thermometer, paper-weights, lamp-stands, tobacco-boxes, flower-pot stands, and a statue of Guttenberg.

651 **Schmidt, Johann Daniel, jun.**, *Sprockhövel*—Manufacturer.

Hardwares, including iron and brass drawer, chest and desk-locks; mortice-locks for work-tables and pianos; burnished steel portfolio, and various locks in iron and brass.

Window-bolts, with appurtenances; bolts and snaps in iron, brass, &c.

Iron and brass hinges, for tables, desks, &c.

Braces, with an assortment of bits. Hollow hand-pad, with tools. Cogwheel braces. Augers, bits, and centre-bits. Gimlets, ordinary and twisted.

Compasses and callipers for carpenters, turners, &c. Pliers, punches, and nippers. Hand-shears, and wire-drawing pincers; carpenters' and other pincers. Sugar-tongs, curling-tongs, nut-crackers, &c. Fox-traps.

Hand and bench vices. Universal screw-wrenches. Wooden and iron screw stocks. Scales and steelyards. Skates of various qualities.

652 **Funke & Huck**, *Hagen*—Manufacturers.

Samples of hardwares, including screws; with points; and with nuts. Patent and common vice; nut-wrench.

653 **Greeff, J. P. G. W., & Son**, *Barmen*—Manufacturers.

Various metal buttons and boxes.

Samples of snuff-boxes.

654 **Woeste, Gustav, & Co.**, *Solingen*—Manufacturers. (Agent in London, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Cards of cast scissors; various specimens of different qualities, plain and ornamented. Samples of shears.

655 **Caron, J. M., & Co.**, *Rauenthal, near Barmen*—Manufacturers.

An assortment of gilt buttons and jewellery, consisting of brooches, rings, crosses, chains, breast-pins, ear-rings, buckles, &c. The materials employed in the manufacture are British, Russian, and Swedish copper and Bohemian glass-stones. The soldering is done by means of a hydro-oxygen apparatus

656 **Wolff & Erbsloeh**, *Barmen*—Manufacturers. (Agents in London, Messrs. E. & H. Blank, 10 Trump Street, King Street.)

Various plated articles: raw materials, gold, platina, silver, and copper. The articles are principally manufactured by machinery.

657 **Seel, Gust**, *Elberfeld*—Manufacturer.

Sundry ornamental articles in hair:—The mourning Jews, after Bendemann. Landscapes: Ruins of a Convent; Forest Country. Wreath of flowers; bouquets of flowers.

Various designs in hair for brooches, earrings, and rings, with finished gold brooch. Album, with a landscape; album, with bouquet. Box, with braids of hair.

658 **Lipp (von), Fredrich**, *Dusseldorf*—Manufacturer.

Perfumery: Düsseldorf water; and oriental pastil.

Specimens of paper-hangings in rolls.

659 **Hilgers, Carl**, *Dusseldorf*—Inventor and Manufacturer.

Lady's writing and work tables, in ebony, with four views of the Rhine.

660 **Eichelberg, J. D., & Co.**, *Iserlohn*—Manufacturers.

Window-curtain, with a frame of brass fixed on wood.

661 **Biefang, Christian**, *Duisburg*—Manufacturer.

Paste and pasteboard articles.

Various frames for daguerreotypes and pictures, in velvet, bronze, and marble: one étuis.

Lithographs in plain colours.

662 **Hoeltring & Hoeffken**, *Barmen*—Manufacturers.

An assortment of India-rubber braces.

[The caoutchouc employed for weaving braces, elastic braids, and webs, is cut spirally from bottle India-rubber, by means of a small rotating knife kept wet by a water-drip. The workman takes half a bottle in his hand, and obtains very long threads by turning it round between his fingers and pressing it to the knife: these threads are afterwards readily joined, by cutting a short piece from each end, and merely placing the freshly-cut surfaces together. The threads are now wound spirally on reels, and stretched considerably in the operation. By leaving them in a state of tension for some weeks, they lose their elasticity, and may be easily woven and made into braid.

On exposure to steam, the elasticity is, however, perfectly restored, and the fabric becomes shortened.—W. D. L. R.]

663 Scheller, Weber, & Wittich, *Hesse-Cassel, Hesse.*

Children's toys—Guns, pistols, cross-bows, furniture, dominoes, lotteries, counters, several sorts of carriages, cannons with metal barrels, and sheep.

664 Basse & Fischer, *Lüdenscheid, Westphalia*—Manufacturers.

Various snuff-boxes, match-boxes, buckles, and lids for tobacco pipes in German silver, pinchbeck, and Britannia metal mountings, silvered.

Strips of escutcheons and rings in German silver. Match-boxes of brass and metal, by machinery from one piece.

665 Kilian, Henry, *Siegen*—Producer.

Wood-carving, representing "The Lord's Supper," after the picture of Leonardo da Vinci.

666 Felthauss, —, *Wetzlar*—Producer.

Fragments of ore from the lately-opened and promising cinnabar and quicksilver mine of Ludwig, near Wetzlar, and samples of the cinnabar procured from the ore.

667 Pfeiffers & Ax, *Rheydt*—Manufacturers.

Cotton, and cotton and wool, mixed. Buckskins.

668 Scheel, C., *Cassel*—Manufacturer.

A cabinet pianoforte of seven octaves, on Erard's principle.

669 Widenmann, J. *Gladbach*—Manufacturer.

Superfine linen damask table-cloths, bearing the Royal arms of England.

Napkins of linen damask, with various private coats of arms.

Fine table-cloth, and other coverings, with sacred subjects.

Fine napkins, towels, and dessert napkins of linen damask.

670 Breithaupt, F. W., & Son, *Cassel*—Manufacturers.

An assortment of physical and mathematical instruments of various descriptions, including theodolites, compasses, sextants, levelling instruments, &c.

671 Vogel, F. W., *Jena, Saxe Weimar*—Bookbinder.

A highly-finished copy of F. von Schiller's works, under glass cover and on a small table.

672 Mecklinghaus & Wex, *Barmen*—Manufacturers.

An assortment of dressed hides for harness, &c.

673 Schmolz, William, & Co., *Solingen and Berlin*—Manufacturers of German Silver Wares, &c. (Agents in London, Bier Brothers, 2 St. Mary-at-Hill, City.)

An assortment of cutlery, including swords, sabres, and hunting knives, polished blades and mounted in steel, brass, pinchbeck, German silver, &c. Table knives, scissors and penknives. Specimens of nickel and German silver in sheets and in wire.

674 Tack, Wm., & Pelizaeus, *Crefeld*—Manufacturers.

Silk, and silk and cotton mixed stuffs, for waistcoats.

675 Schulte, J. H., *Barmen*—Manufacturer.

Silk, and silk and cotton mixed stuffs, for waistcoats.

676 Siepermann & Moehlau, *Derendorf, near Dusseldorf*—Manufacturers.

Printed cotton stuff for furniture.

677 Krupp, F., *Essen, near the Ruhr*—Inventor and Manufacturer.

Steel gun, 6-pounder, complete. Steel cuirass, and one tried by being fired at with six different bullets. Steel rollers, springs, and railway axle.

678 Teutenberg, Ludwig, *Hüsten, Kreis Arnsberg*—Inventor and Manufacturer.

Rifle with seven barrels, which can all be fired and loaded at once, particularly applicable for shooting wild fowl, &c.

e. PRUSSIA.—SAXON GRAND DUCHY AND DUCHIES.—BRUNSWICK, ANHALT, AND THURINGIAN PRINCIPALITIES.

679 Benninghauss, J. C., *Thale, near Quedlinburg*—Producer.

Sparry ironstone, from the mines of Hoffnung and Segen Gottes. Brown iron ore, from the mine of Heiligenberg. Pig iron, furnace slags, iron in bars, &c. Various cooking utensils of pate iron, worked in one piece and enamelled.

680 Schade, Eduard, *Breitenbach*—Manufacturer.

Picture on porcelain, in gold frame, representing Jubal, the inventor of music.

Painted porcelain plate, representing a picture, after Raphael.

Lady's portrait, in a costume of the time of Louis XVI.

681 Royal Salt Works *at Artern*—Manufacturer.

Mellite, common salt, and mother-ley and rock salt.

682 Ducal Iron Works at Magdesprung, *near Harzgerode, Anhalt—Bernburg.*

Model of a wind instrument constructed by Lüders. Sparry iron, raw and roasted, with magnetic ironstone crystals, from the mines at Neudorf. White pig iron. Slags from the high-furnace, with crystals. Axletree, puddled, and re-heated by gas. Waggon-boxes, and a sample of iron. Model of a gas-furnace, constructed by Bischof.

Fluor-spar. Artificial lead-glance crystals. Crude antimony, three varieties. Litharge or protoxide of lead. Pure hardened lead, for bearings, types, &c. Mixed vitriol.

The sparry iron ore is used for the manufacture of pig iron, and changes in roasting into magnetic ironstone, discernible by the crystals. The manufacture of iron into bars, by means of gas, is but in its infancy; but the iron produced in this manner is considered to be preferable to that produced by means of charcoal, and to the puddled iron in bars made by pit-coal.

[The lignites of Germany have not been found favourable to the production of good iron; the principle has, therefore, been introduced of distilling the fuel in close vessels, and using the resulting gases in a state of combustion in the furnace as the source of heat to melt the iron. The results, as far as the experiment has yet been tried, are very satisfactory, and the use of gases there is rapidly extending in the iron districts of the Continent. The relative values of the iron-producing States of Europe may be inferred from the following return obtained in 1845 :—

	Tons.
Great Britain	2,000,000
United States	502,000
France	448,000
Russia	400,000
Prussian Zollverein	300,000
Austria	190,000
Belgium	150,000
Sweden	145,000
All the other European states	76,000

R. H.]

683 **Hermann, O.**, Proprietor of the Chemical Manufactory (formerly Royal) at *Schönebeck*.

Chemical preparations and specimens of common salt. White oxide of zinc, prepared in the dry way. Iron alum. Red prussiate of potash of Gmelin. Pure gallic acid. Crystallized tartrate of potash. Hyposulphate of soda. Chlorate of potassium. Cyanide of potassium. Pure carbonate of potash. Dry nitrate of strontian. Crystallized nitrate of barytes. Glacial phosphoric acid. Potassium, 3 lbs. net, in petroleum. Iodine, 3 lbs. net, in petroleum. Chloroform. Bromine, 1 lb. net, in water. Sulphuret of carbon, 1½ lbs net, in water. Chloride of tin. Pure oxide of copper. Precipitated nitrate of bismuth. Pure succinic acid. Caustic potash, in sticks. Metallic cadmium. Biniodide of mercury.

684 **Weiss, Julius Heinrich**, *Mühlhausen*—Manufacturer.

Produce of plants :—Madder lac-colours, for artistic painting. Madder covering-colours. Patterns coloured with the dyes.

685 **Behm, F.**, *Hoym, near Ballenstedt, Anhalt, Bernburg*—Manufacturer.

Sugar from red beet. From one acre of ground there are obtained 120 cwts. of red beet, equal to 5½ cwts. of raw sugar.

[This sugar is extracted from the common red beet-root (*Beta vulgaris*). It is largely consumed in Germany and in France, both directly as sugar, and indirectly for the purposes of distillation. After the sugar is extracted, the residuum, pressed into cakes, forms a very nutritive food for cattle. It is manufactured to a small extent in England, but cannot compete in price with the colonial cane-sugars. Our climate is ill-suited to the growth of this variety of beet, and a fiscal duty of nearly 15*s.* per cwt. operates against its manufacture. The average production of sugar is about 5 per cent. on the weight of the raw material.—J. W.]

686 **Bleibtreu, Ludwig Otto**, *Brunswick*—Manufacturer.

Chicory-root, kiln-dried, in slices ; roasted, and ground to powder. Prepared chicory-coffee.

[Chicory (*Cichorium intybus*) is extensively used for the purpose of adulterating coffee. When properly prepared, it yields a large proportion of a dark-coloured extractive matter, similar in appearance to coffee, but entirely destitute of the aromatic flavour peculiar to the latter.]

687 **Brumme, A. F. W., & Co.**, *Waldau, Bernburg, Anhalt*—Manufacturers.

Samples of sugar, manufactured from red beet-root.

688 **Feigenspan, Adolph**, *Muhlhausen*—Manufacturer.

Samples of glue.

689 **Haberland, Wilhelm**, *Schoeningen, Brunswick*—Manufacturer.

Samples of dried fruit. Peeled apples, pears, plums without stones, melons, cherries, &c.

690 **Haller, Joseph & Christopher**, *Halle*—Manufacturers.

Specimens of wheat starch, for various purposes. Produced by machinery, and by chemical processes ; 100 lbs. of wheat yielding 50 lbs. of starch.

691 **Hennige & Wiese**, *Magdeburg*—Manufacturers. (Agent in London, Mr. John Horstmann, 26 Finsbury Square.)

Sugar, made from red beet-root, and with the centrifugal machine. Loaves of sugar (purified). Refined beet sugar.

692 **Salomon, J. A., & Co.**, *Brunswick*—Manufacturers.

Dried chicory-root ; the same, powdered. Chicory-coffee.

693 **Teichmann, Cæsar**, *Erfurt*—Manufacturer.

Samples of succory and powder.

Vermicelli, maccaroni, wheat-grits, pearl-barley, mustard, and blacking.

694 **The Loburg Manufactory**, *Jerichow, Magdeburg*—Manufacturer.

Brown and white sago ; grape sugar ; potato flour and starch ; pearl barley ; artificial gum in cake and powdered ; white and brown treacle ; white sago-grits ; dry burnt starch, in three qualities, for factories ; pipe starch ; ringed and powdered starch, made of wheat of the first quality.

[Sago, as it is imported into Europe, is in little hard grains, and is a species of starch in an impure form ; it is obtained from the pith of an East Indian palm (the *Sagus farinifera*), which attains a height of thirty feet. Of late the fecula has been obtained from the crude sago in a much purer form, and is then sold under the name of sago-starch ; it is much used as a stiffener in dressing calico, &c.

Grape sugar (glucose, sugar of starch, sugar of fruits, diabetic sugar) is, like cane sugar, a compound of carbon, hydrogen, and oxygen, but differs from the latter in containing a greater proportion of hydrogen and oxygen. The grape and many other fruits, together with honey, owe their sweetness to this substance. Dilute acids convert cane sugar, sugar of milk, starch, and woody fibre (rags or paper for instance), into grape sugar.

Potato starch is one of the purest forms of starch ; it consists of small egg-shaped grains, which are composed of several concentric membranes. Starch is coloured blue by iodine and orange by bromine. Added to water at 140° Fahr., the outer envelope of the starch bursts and a jelly is formed. By the action of boiling dilute acids, or of an infusion of malt (which contains a peculiar substance called diastase) kept for some time at a temperature of 150°, starch is converted first into dextrine, having the same composition as starch, and by the continual action lastly into grape sugar. Dry starch, heated to a temperature between 212° and 250°, is likewise converted into a sort of dextrine. Artificial gum, British gum, &c., are commercial names for different preparations of dextrine, which is much used as a stiffener, and a vehicle for the dyes of the calico printer. Starch is a compound of carbon, hydrogen, and oxygen. —W. D. L. R.]

695 Wittekop & Co., *Brunswick*—Manufacturers.

Samples of flour, groats, maccaroni, and chocolate. The manufacture of maccaroni and vermicelli is carried on in two establishments: in the one the kneading and pressing of the dough is done by hand, in the other by steam.

696 Giessler, Nicholas Henry, *Tröchtelborn*—Manufacturer.

Balls of woad, prepared from pure woad leaves.

[Woad is a plant of the cruciferous or colewort order. It is the *Isatis tinctoria* of botanists. The expressed juice of the leaves affords a blue dye. The Picts and ancient Britons painted their bodies with woad.—E. F.]

697 Hucke, Carl, Manager and Teacher of the School of Agriculture, at *Alach, near Erfurt*.

Samples of hogs' bristles, taken from animals of different races.

Canary and coriander seeds.

698 Anschuetz, Robert, *Zella* (*St. Marii*), *Duchy of Gotha*—Manufacturer.

Double gun-barrels of common wire-damask; of common flower damask; of fine Paris damask; of fine flower (Turkish) damask; and of fine chain damask.

Rifle barrels of fine flower (Turkish) damask; of Laminette damask; of Gotha damask; of fine steel-wire damask; and of iron damask.

The iron for the steel is made in Zella of sparry ironstone, obtained in the district of Schmalkalden.

[The true damask, or Damascus, work on steel, is the result of welding iron and steel in alternate bands together; then twisting the bar in various ways, by which the variations of the pattern on the polished gun-barrel or sword-blade is produced. In some cases, the steel has iron wire beaten into it, at a welding temperature. An artificial damask is very often produced by the action of acids on the surface; but the pattern thus produced can be readily obliterated, which is not the case with that on the real Damascus work.—R. H.]

699 Brecht, August, *Weimar*—Manufacturer.
(Agent in London, Consul S. Collmann.)

Double rifle, with fine damascene barrels, walnut-tree stock.

Single rifle, with damask barrel, and highly-finished nut-tree stock, arranged for pointed and round balls.

The iron employed is from Thuringia; the barrels are from Liege; and the stocks of the wood of native nut-trees.

700 Hanau, Wilhelm, *Gera, Reuss*—Manufacturer.

Pair of pistols for round and pointed balls, with the necessary apparatus, in a case.

701 König, C. G., & Sons, Gunmakers to H.R.H. the Duke of Saxe-Coburg Gotha, *Duchy of Sachsen Coburg* — Manufacturers. (Agent, Joseph Kendall, 8 Harp Lane, Tower St.)

Pair of octagon pistols; barrels and shaft inlaid with gold and silver, in the Gothic style, the stocks of elm (*Ulmus campestris*), inlaid with silver, with complete apparatus and case.

702 Sauerbrey, Ludwig, *Zella, Duchy of Gotha*—Manufacturer.

Double rifle, of cast steel, with apparatus of 13 pieces in a box, made of one piece of cast steel, and not soldered together. Both barrels are bored in a converging direction, to one aim, in such a manner as to direct the balls to the same mark. It carries pointed and also round balls.

Double rifle of damask, of cast steel, with Liege barrels, and apparatus for pointed and round balls.

Double gun of damask, with Liege barrels, with apparatus of 7 pieces, in box, for all descriptions of balls and shot.

704 Ausfeld, H., *Gotha, Duchy of Saxe Gotha*—Manufacturer.

Planimeter, an instrument invented by Dr. Flaussen, of the Observatory at Seeberg, for the purpose of measuring surfaces.

[Planimetry, or the art of measuring planes or surfaces, is performed by determining how many squares, whose sides are certain measures of length, are contained therein, so that the area or contents of any surface is known when we know how many square inches, feet, &c., it contains. The instrument above is exhibited for this purpose.—J. G.]

Microscope, the lenses of which are arranged in such a manner that, at their greatest distance from the object-glass, a magnified and well-defined picture is said to be obtained. The magnifying powers vary from 18 to 150 (linear).

705 Broemel, August, *Arnstadt, Principality of Schwarzburg, Sonderhausen*—Manufacturer.

Decimal balance, to weigh from 10 to 15 cwts; another in brass, to weigh 1 cwt., adapted for bankers. The iron and wood are from the Thuringian forest.

706 Nietzschmann & Vaccani, *Halle*—Manufacturers.

Drawing cases and mathematical instruments in brass and new silver. Sets of compasses, polished and unpolished.

707 Schultze, Johan & Friedrich, *Paulinzelle, Principality of Rudolstadt, Schwarzburg*—Manufacturers.

An organ; its peculiarities consisting in great power of tone and simplicity of mechanism, with a contrivance for producing deeper tones, and an arrangement for "accelerating the transmission of sound."

708 Wagner & Co., *Gera, Reuss*—Manufacturers.
(Agents, Messrs. Elemenhorst Brothers, London.)

Accordions, inlaid with fine metal and mother-of-pearl. Glazed cupboard.

709 Zeitter, F., & Winkelmann, T. Ch., *Brunswick*—Manufacturers.

A pianoforte, and a grand pianoforte.

710 Danneberg & Son, *Eilenburg*—Manufacturers.

White and coloured furniture stuffs. Jaconets.

Millefleurs—pink, lilac, blue, ultramarine.

Calicoes—millefleurs, light ground, pink, violet green, and madder.

711 Vogel & Carner, *Gera, Reuss*—Manufacturers.

Coloured and woven cotton goods; goods figured, coloured, and woven in the Jacquard loom, made of German and English cotton yarn. These goods are chiefly in demand in European Turkey and in Persia, where they are used, partly for garments, and partly for ornamenting rooms.

712 Hagenbusch, C. G., *Weimar*—Manufacturer.
(Agent in London, the Consul S. Collmann.)

Four-fold worsted yarns.

Raw yarns, zephyr and castor.

Dyed yarns, zephyr and castor. Manufactured at the worsted yarn works at Weimar, partly from Silesian and West Prussian and partly from Saxon wools. The coloured yarns were dyed at the manufactory of Messrs. Schuster Brothers, of Berlin.

713 **Haseloff & Co.**, *Burg*—Manufacturers. (Agent, Mr. G. A. Seeger.)

Black, blue, and violet royal cloths. Violet, black, and blue cloth. The wools employed are partly from Silesia, partly from the grand duchy of Posen, and partly from the farms of the vicinity.

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714 **Walter, Hennig, & Co.**, *Ronneburgh, Reuss*—Manufacturers. (Agents in London, Suse & Sibeth.)

Specimens of Thibet, mousseline-de-laine, cashmere d'Ecosse, and Napolitaine. All woven of comb-yarn, and dyed in various colours.

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715 **Damsch, Muenzer, & Sons**, *Ronneburg, Duchy of Saxe Altenburg*—Manufacturers. (Agent, H. Hoffmann, 10 Tokenhouse Yard.)

Pieces of doucet; white smooth shirt flannel, all wool; plaid shirt flannel, white; gauze flannels; the same, scarlet; cashmere, all wool; twilled fine shirt flannel, white; moltong.

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716 **Weber, Ernst**, *Gera, Reuss*—Manufacturer. (Agent in London, Mr. Charles Holland, 41 Finsbury Circus.)

Woollen plain stuff goods.

Thibet; satin burber, and mousseline-de-laine.

Woollen stuffs, figured and printed. Chequered and plain square printed table-covers.

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717 **Weiss, jun., & Co.**, *Langensalza*—Manufacturers.

Specimens of worsted yarn spun from Prussian wool; used for Thibets, alepines, barèges, cashmeres, mousseline-de-laines, and similar stuffs.

Zephyr yarns employed for embroideries, shawls, and similar articles.

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718 **Zimmerman, Christian, & Son**, *Apolda, Saxe Weimar*—Manufacturers. (Agent in London, Mr. Charles Holland, 41 Finsbury Circus.)

Various cotton and woollen hosiery and fancy articles.

Woollen carpets, rugs, muffs, boas, mantellas, caps, socks, ruffles, mittens lined with skin, &c.

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719 **Scheibe, Gustav**, *Gera*—Manufacturer.

Tanned horse and calf skin for sole-leather. Exhibited for softness and elasticity.

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720 **Weissflog, Ernst Friedrich**, *Gera, Reuss*—Manufacturer. (Agent in London, Mr. Benjamin Grus, 1 Sambrook Court, Basinghall Street.)

Specimens of Thibet, and satin de laine; the same figured. Piece of embroidery on velvet.

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721 **Directors of the Herford Prison**, *Westphalia*—Manufacturers.

Various specimens of carpeting, linen, furniture covering, and fancy works; including carpeting, entirely of cow hair; linen; double linen, with damask pattern; and chequered furniture covering.

String basket; hemp and string ladies' bags.

Papier maché case, ornamented with straws.

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722 **Hornig, C. E.**, *Brunswick*—Manufacturer.

Samples of flax and tow.

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723 **Müller, August Friedrich**, *Mühlhausen*—Manufacturer.

Ladies' cloakings, crimson, blue, scarlet, green, grey, black and white, and plain mixture.

Flag cloth. Estamin for cartridges, sackcloth, and plush-caps, &c., all wool.

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724 **Urban, August**, *Gandersheim, Brunswick*—Manufacturer.

Damask table-linen, composed of table-cloth and napkins, made of a hand-web, prepared from a yarn reaped and spun in the vicinity of Gandersheim.

Sample of linen made of English machine-yarn.

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725 **Bauer & Fürbringer**, *Gera, Reuss*—Manufacturers.

Woollen and half-silk goods; including, Thibet, Cashmere, &c., handkerchiefs, shawls, and scarfs, in various colours. Wool muslin, sky blue.

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726 **Bodemer, J., jun.** *Eilenburg*—Manufacturer.

Half wool muslin; jaconet de laine, half wool; challis, all wool; muslin and cachemire d'Ecosse.

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727 **Bröesel, Eduard**, *Greiz*—Manufacturer. (Agent in London, J. Kemp, 7A Basinghall Street.)

Peruvian bordé. Thibet. Carnation, light-blue and black. Cachemere green Isly. Mousseline-de-laine wine green and light-blue. Jacquard kali. Calabria pensé, drab and dark-green. Satin-de-laine. Drab satin croisé.

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728 **Bauch, F. T.**, *Greiz, Reuss*—Manufacturer.

Thibet, green and drab; cashmere, nacarra; satin, nacarra; mousseline-de-laine shawls.

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729 **Lucius, J. C., & Co.**, *Erfurt*—Manufacturers. (Agents in London, Schmuck, Somlay, & Co.)

An assortment of damasks for furniture, woollen, and worsted weft; silk-spun warp, worsted weft; amaranthe, cotton warp and silk weft.

Scottish dresses, cotton warp and worsted weft; fancy dresses, Columbia.

Tartan plaid; soft tartan plaid; coutet, cotton and linen, Turkey-red; cotton and linen, blue and white; stramin cords, cotton and worsted.

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730 **Macht, H. W.**, *Zeulenroda*—Manufacturer. (Agents in London, Gottschalk & Schröder, 72 Basinghall Street.)

Shoe-stuffs of cotton mixed with wool; woollen garments; garments of linen mixed with cotton, and of wool mixed with cotton.

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731 **Morand & Co.**, *Gera, Reuss*—Manufacturers. (Agent in London, Mr. Charles Holland, 41 Finsbury Circus.)

Half-silk goods: alepine; alepine satin; Zanella electorate. Comb-wool stuffs: Thibet; tiosa Cachemere; Cachemere d'Ecosse; mousseline-de-laine; satin d'Espagne; Napolitaine; drap d'eté; and cuir de laine.

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732 **Schraidt & Co.**, *Coburg*—Manufacturers.

Drills, grey and coloured; half-linen, for trousers and stays. Bed-ticking and cotton, red and white, and Turkey-red (yarn-warp). The drills are all of cotton-warp and linen-shot; the Turkey-red yarns dyed by the exhibitors.

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733 **Schweitzer & Heller**, *Greiz, Ruess*—Manufacturers.

Specimens of Thibet black stuff; Cachemere, atlas-olive and black; mandarine, lilac and mode.

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734 **Wiegand, Ernst**, *Erfurt*—Manufacturer.

Double damask cover, with red silk fringe. On the right side a white cotton warp and silk shoot, on the other an orange cotton warp and blue wool shoot. The patterns are altogether different, and both warps are closely interwoven with each other.

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735 **Buchner, August**, *Erfurt*—Manufacturer.

Large gaiter-boots, various.

Lilac velvet gaiter-boots.

Serge and cordovan shoes.

736 **Encke, Franz**, *Gera, Reuss*—Manufacturer.
Skins for light and black bridles.
Pair of tops for boots.
Ornamental table-cover.

737 **Kramer & Baldamus**, *Magdeburg*. (Agent in London, Mr. Schaefer.)
Skin of black smooth leather. Brown and light bridle-skins, made of German skins, and curried with oak-tan.

738 **Kretschmann, H. W.**, *Eisenburg, Duchy of Saxe Altenburg*—Manufacturer.
Shoe stuffs. Stramin cord and woollen shoe-cord. Ladies' and gentlemen's shoe-tops, various.

739 **Lange, Frederick**, *Halle*—Manufacturer.
Lady's saddle complete, with bridle, hind-piece, and fore-part; gentleman's saddle; saddle-tree, complete, with the exception of the leather-work. Made according to a new method.

740 **Langethal, Gottlob**, *Erfurt*—Manufacturer.
Calf leather boots; enamelled boots, and boots for buttoning, &c.

741 **Ranniger, J. L., & Sons**, *Altenburg, Duchy of Saxe Altenburg*—Manufacturers.
Coloured lamb-skins. Fine leather gloves. Dyed leather samples.

742 **Scheibe, Herrman Lebrecht**, *Gera, Reuss*—Manufacturer.
Specimens of tanned calf-skins. Exhibited for softness and durability.

743 **Sondermann, W.**, *Erfurt*—Manufacturer.
Machine or cylinder parchment. Parchment skins, for printing or writing upon, and drum calf-skins.

744 **Weber, C. F.**, *Langensalza*—Manufacturer.
Smoothing-tree for kid leather. Exhibited for its elasticity, durability, and retaining its shape.

745 **Wiegand, F.**, *Erfurt*—Manufacturer.
Serge and brown leather shoes and serge boots.
Varnished leather clogs. Stuff shoes with caoutchouc. The shoes are of English serge-de-Berry, varnished Mayence, calf leather, "bronze" leather from Paris, and "visite" leather.
The elastic caoutchouc material is manufactured by Mr. J. L. Raempler.

[The manufacture of leather in the Zollverein differs from that of other countries, inasmuch as the leather manufacturers of Germany are, generally speaking, bent upon attaining to an equal degree of perfection in every branch of this department of industry, whereas foreign establishments usually cultivate only one branch of it. The maximum of exports under this head reaches a sum of 1,146,000 thalers per annum, and is derived not only from the well-known manufactures of the Rhenish provinces and of Westphalia, from the morocco leather and glazed or enamelled leather manufactures of Mayence, Bavaria, and Berlin, but also from those of shoes and gloves in many parts of the Zollverein, which have found for themselves a market in almost every foreign country.]

746 **Graf, H.**, *Duchy of Saxe Altenburg*—Bookbinder.
Altar-Bible, with 30 large steel-plate engravings, in violet leather, and covers and lining gilt internally and externally.

747 **Körner, G. Wilhelm**, *Erfurt*—Music-Seller.
Organ music, Bach. The Young Organ-master. Compositions for the Organ, v. vols.—Fischer. Choral-book, i. ii. —Körner. The Perfect Organ-player, i. ii. The Organist's Friend, i. to vii.—Kühmstedt. Op. xxviii. Bruck, Fischer, Mendelssohn. Album.—Töpfer. i. Choral-book.—Urania. vi. Annual sets.

[John Sebastian Bach was born at Eisenach, 1685, and died circ. 1749. Arnold Von Bruck was a composer early in the 16th century. Gottlieb Töpfer was born in 1792, at Niederossla. Felix Mendelssohn Bartholdy was born at Berlin on the 3rd February, 1809. The date of his lamented death is recent and well remembered.—H. E. D.]

748 **Beisser, Wm.**, *Köthen*—Bookbinder.
Album of coloured drawing-paper, with violet margin, and gilt edge.

749 **Westerman, George**, *Brunswick*—Printer.
"European Gallery," a copper-plate work, bound in red leather. The plates of English engraving. "History of the Courts of Valkenstein," also bound in red leather. The printing, paper, and type, of both works are of German manufacture.

750 **Ehrenberg & Richter**, *Eilenburg*—Manufacturers.
Coloured calico:—Blue, orange, red, green, lilac, brown and red, pink and crimson. Coloured shirting.

751 **Alberti, Miss Friederike**, *Nauen*—Manufacturer.
Table-cover, embroidered with silk, chenille, and gold, with bouquet of flowers and white stags.

752 **Grossmann, Agnes**, *Weissenfels*.
Embroidered carpet: principal design, "the discovery of Moses in the ark of bulrushes."

753 **Gottschalk, J. A.**, *Erfurt*—Manufacturer.
Gaiter-boots, satin, and lasting. Satin and japanned shoes.
Brown kid-leather shoes. Lasting, leather, and silk sewed shoes.
Japanned and lasting gentlemen's boots.
Children's boots for buttoning and lacing. Infants shoes.
Horse-leather gentlemen's boots.

754 **Israel, Chs.**, *Erfurt*—Manufacturer.
Extra superfine four-seamed plush caps.
Hand-knitting work.
Tuck, plain, and pointed caps.

755 **Krocker, Chr. Fr., & Son**, *Zeulenroda*—Manufacturers.
A variety of women's stockings and half-hose.

756 **Schmidt, Wilhelm's Sons**, *Zerbst*—Manufacturers.
Silk hats; beaver hats; and long and short-haired beavers, white.
The beaver hats are made of pure rupen hair; the white beaver hat of German white long hair.

757 **Schopper, H.**, *Zuelenroda*—Manufacturer. (Agent in London, William Meyerstein, 15 Watling Street.)
Specimens of ladies' and gentlemen's cotton and thread stockings.

758 **Schopper, C. F.**, *Zeulenroda, Reuss*—Manufacturer. (Agents in London, A. Gottschalk & Schröder, 72 Basinghall Street.)
Women's brown and white hose, and men's brown half-hose, made of English twist.

759 **Webendörfer Brothers**, *Zeulenroda, Reuss*—Manufacturers.
Men and women's white and brown cotton hose, two and three threads. Half-hose, four threads.

760 **Baum, Edward**, *Coburg*—Manufacturer.

Stove of polished iron plate, in the form of a "Knight in full armour," with a base of cast-iron.

This stove is represented in the adjoining column.

761 **Beyer & Heinze**, *at Dobra, near Liebenwerda*—Manufacturers.

Parqueterie squares for floors, exhibited for workmanship.

762 **Einsiedel**, Count G., *Iron Works, Lauchhammer*—Manufacturer.

Cast-iron goods:—Stoves, enamelled kettles, pots, milk-cans, horse-manger, &c.

Ornamental bronze casts:—Water-drawer. Bust of the Prince of Prussia. Polar bears, monkeys, tigers, &c.

Nos. 21, 22, 23, and 24, 25, 26, were modelled by the same artist in the years 1849 and 1850, all from living originals, and all in the London Zoological Gardens except the last.

763 **Fleischmann, A.**, *Sonneberg, Saxe Meiningen*—Manufacturer. (Agent, Mr. Joseph Kendall, 8 Harp Lane, Great Tower Street, London.)

An étagère, with side pieces; tables, with stands of vines, which form an arbour; the branches supporting two strong glass plates, forming a chiffonnière. Drawings of other articles of furniture. These articles are termed by the exhibitor "Paxton furniture," and are chiefly composed of iron and glass. (Provisionally registered.)

Looking-glass frame, with glass.

Madonna and bracket, bronzed.

Knights various, bronzed.

Bronzed and gilt brackets, in the Roman, Greek, Byzantine, Gothic, and renaissance styles, &c., bronzed and wood-coloured.

Mazeppa and horse, bronzed. Dog, bronzed.

Candle-screen, wood-coloured.

Pair of architectural ornaments in the renaissance style.

An assortment of animals, in wood colour.

Daguerreotype frames.

Assortment of medallions, in horn frames.

Various serpentine stone mug and cups, boxes, cross, and goblet, with medallions.

A lustre, composed of papier maché, representing Jullien's comic concert, with 20 musicians, modelled by Sachsenwager. (Provisionally registered.)

764 **Meyer & Wried**, Successors to **Stobwasser**, *Brunswick*—Manufacturer.

Japanned tea-trays, with pictures. "The Summer's Evening," after Nickoll. "The Tinker," after Mieris.

Varnished paintings, with gilt frames. "Children," after Füger. "The Blind Fiddler," after Wilkie. "A Rural Stable," after Pfeiffer.

765 **Piegler, G.**, *Schleiz*—Manufacturer.

Night-clocks. Dressing-glasses. Lamp. Candle-screen. Table-candlesticks; screen-candlesticks. Candle-screens. Plated tinder-boxes. Match-boxes. Fumigating machines.

"Travelling-candlesticks. Stalleur-lamps." Bottle-corks. Boot-jacks. Tinder-boxes, German silver.

766 **Stübgen & Kleemann**, *Erfurt*—Manufacturers.

Brass sliding, or staff lamp.

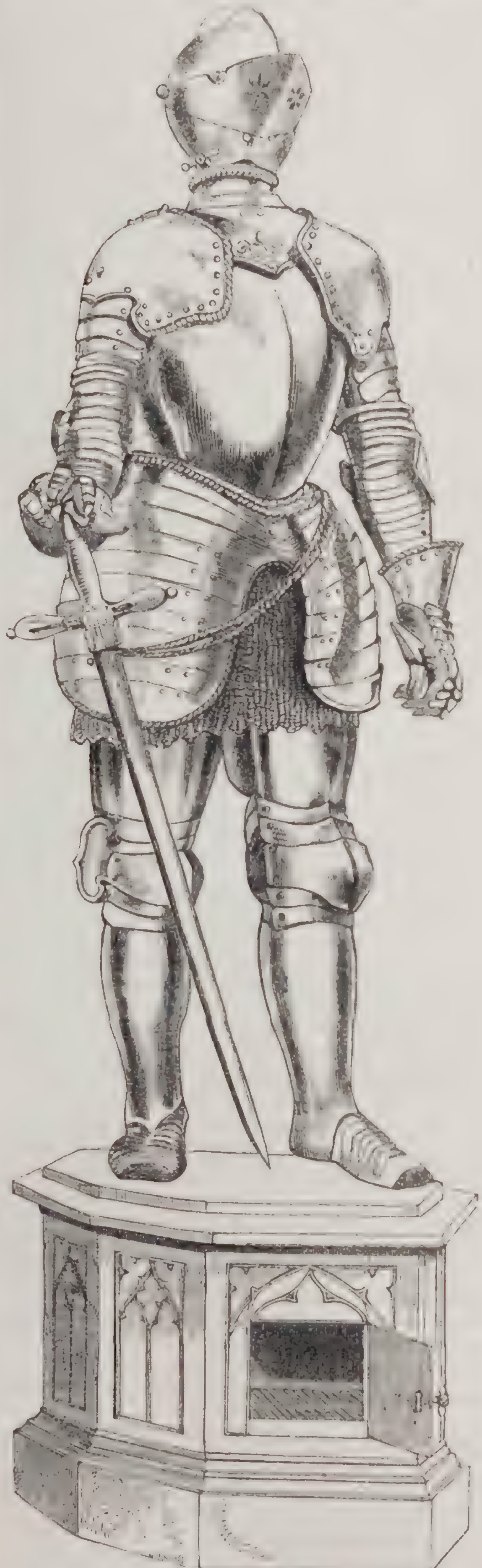
767 **Wallack, August**, *Weimar*—Manufacturer. (Agent in London, — Collmann.)

Bronze jewel-box in the Byzantine style, partly gilt and partly silvered.

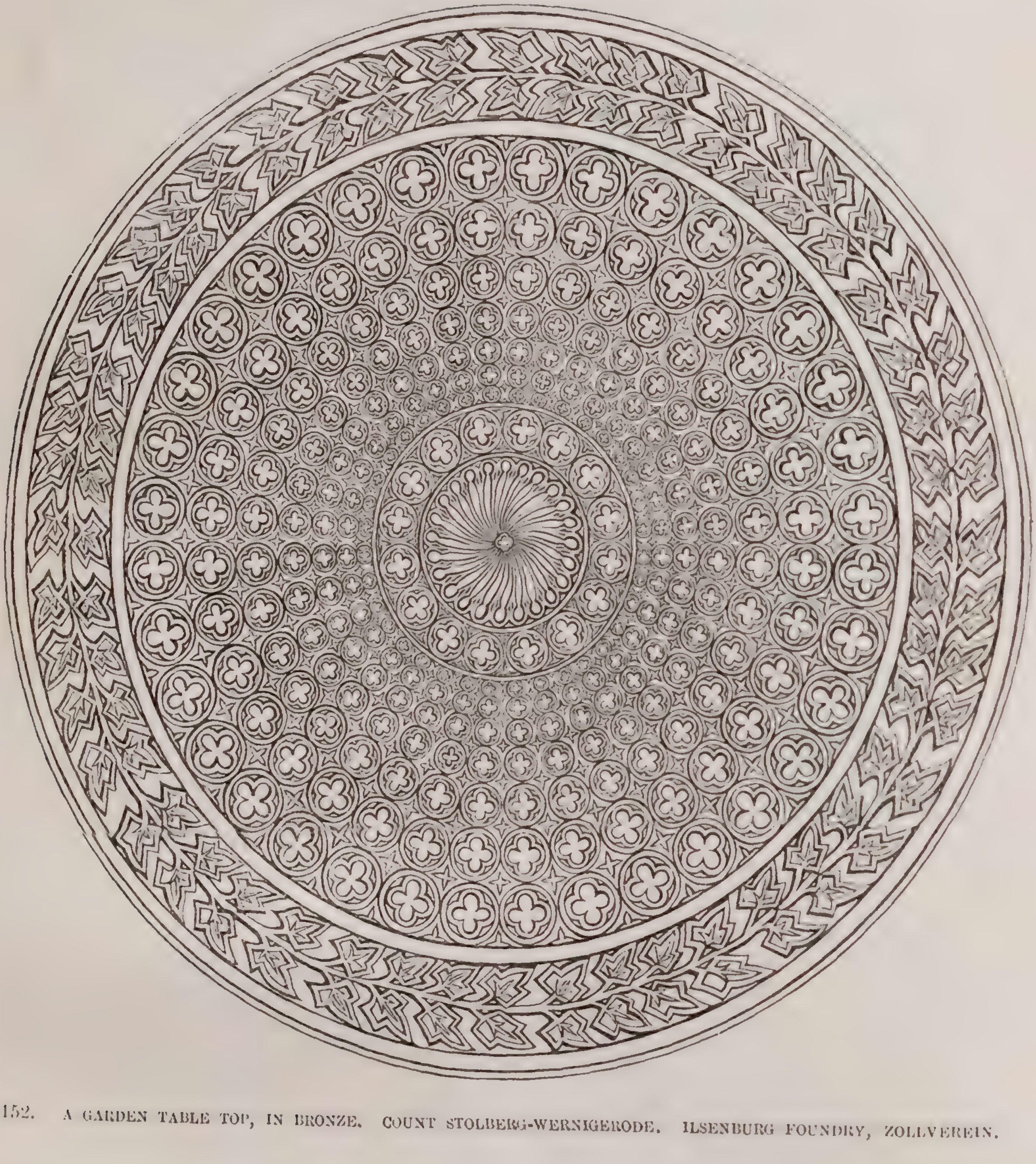
768 **Röehrig, Carl**, *Braunlage, Brunswick*—Manufacturer. (Agents in London, Messrs. A. & P. Joseph Meyers & Co., 144 Leadenhall Street.)

Specimens of glass cylinders.

Plate glass; plate glass, with paintings.



Baum's Stove of Polished Iron.



152. A GARDEN TABLE TOP, IN BRONZE. COUNT STOLBERG-WERNIGERODE. ILSENBURG FOUNDRY, ZOLLVEREIN.

Double beaver's-tail tiles and gutter-tiles of glass.

Bowed plate glass.

The glass cylinders exhibit the plate-glass in its half-finished state, before opening out, and are only exhibited to show the size and purity of the plate-glass. The materials for the manufacture, consisting of white sand, quartz, and chalk, are found in the neighbourhood.

769 Bolm, Carl, *Brunswick*—Manufacturer.

Tea-kettle, tea-pot, and milk-jug, of brass, manufactured and ornamented by hand.

770 Hagen, (Von), A., *Erfurt*—Manufacturer.

Writing chiffonnière, of walnut-tree wood, in the renaissance style. The carving-work is neither japanned nor varnished. The interior arrangement is in metal marqueterie-work and carving, with secret drawers, and plan of the same. The marqueterie-work is of silver, copper, brass, ivory, and mother-of-pearl. The slab is formed of different sorts of wood; and, by touching its lock, a receptacle for paper is opened.

771 Heinrich, G., *Zerbst*—Manufacturer.

Looking-glass; the frame of carton-pierre, with gilding and ivory medallions.

772 Henneberg, F. E., & Co., *Gotha*—Manufacturers.

A lady's work-table, inlaid with porcelain plates and fine painting. The carpenter's work and carving sketched by Mr. Amthor.

A fruit-basket on a pillar, with gold ornaments on blue ground, varnished.

A tea-tray, with a group, "The Fisherman's Family," after Riedel.

A porcelain plate, in gold frame, with a view of "The Weather-horn in Switzerland."

Two vases, with embossed flower ornaments, decorated with views of Coburg and Gotha.

A statuette in biscuit.

A goblet, with filigree ornaments, and gold and coloured decoration.

A tea-service, white and gilt, consisting of tray, jug, tea-pot, slop-basin, cream-jug, sugar-bowl, cups, and saucers.

White cups and saucers, in various shapes.

The materials used in the manufacture of the porcelain are all the produce of the country.

773 Hoffmeister, Thomas, & Behrens, T., *Coburg*—Manufacturers. (Agent, Joseph Kendall, 8 Harp Lane, Great Tower Street, London.)

Oak sideboard, decorated with carved work, in the true German-Gothic style of the middle age, and ornamented with brown plush.

Four carved oak Gothic arm-chairs, of the same work and style.

774 Hupfer & Wolfermann, *Schmölln, Saxe Altenburg*—Manufacturers.

A variety of fancy and ornamental snuff-boxes, &c., in papier maché, tortoiseshell, &c.

775 Puff, Wilhelm, *Coburg*—Manufacturer. (Agent, Joseph Kendall, 8 Harp Lane, Great Tower Street, London.)

Table in the old German style, with inlaid work, in the natural colours of the wood.

776 Scharf, Christian, *Anhalt, Bernburg*—Manufacturer.

Draught-board ornamented, and manufactured of mahogany, chestnut, maple, rosewood, zebra, and pine woods.

777 Schrader, C., *Anhalt, Bernburg*—Manufacturer.

Ornamental draught-board, consisting of plum-tree, kingswood, rosewood, chestnut, melon, mahogany, and maple-wood.

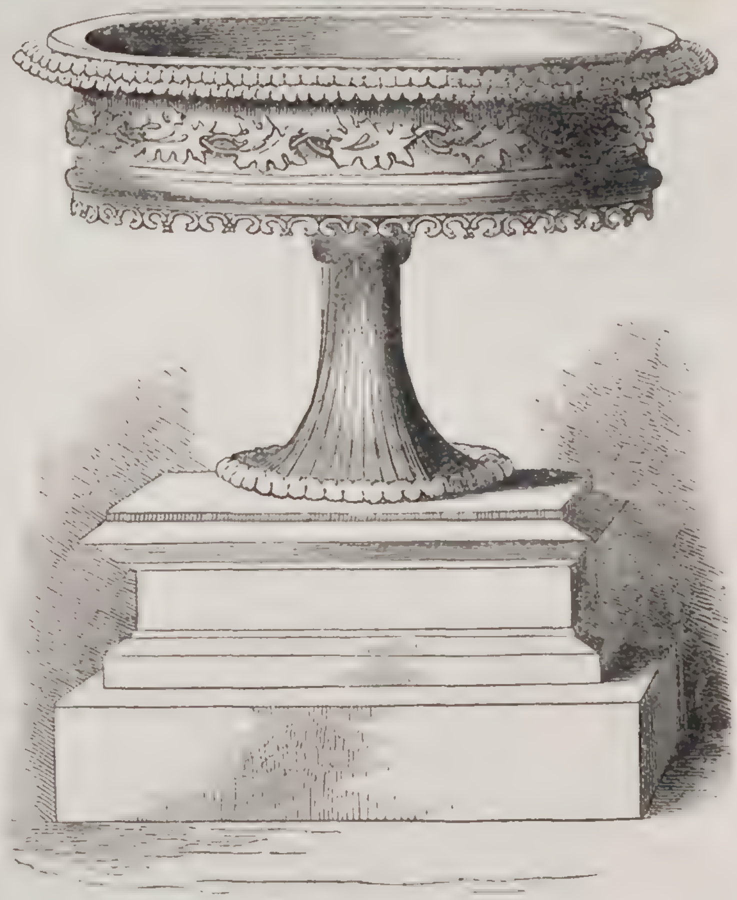
778 Arnoldi, C. E. & F., *Elgersburg, Duchy of Coburg, Gotha*—Manufacturers.

Pharmaceutical instruments, crucibles, measures, funnels, water-pipes, mortars, retorts, filters, evaporating dishes and basins, &c., made of earths and clay found in the Thuringian forest.

779 Stolberg and Werningerode, Earl of, *Ilsenburg Foundry.*

1. A Gothic vase, intended for water to play from the opening in the centre of the basin, and showing an attempt to produce a vase in the Gothic style. Remarkable for the superiority of the figured castings, the bronze painting, and the cheapness of the finished article.

This vase is represented in the annexed cut:—



Earl of Stolberg's Gothic Vase.

2. A window-frame, remarkable for its large size, and the perfection of the casting; the difficulty being to prevent its breaking, from contraction in cooling.

3. A garden-table, with Gothic figured board and stand. The board cast of one piece.

This table is represented in the Plate 152.

4. A marble table, with cast-iron stand: a specimen of the quality of the marble from the mines in the neighbourhood of Ilsenburg.

5. A Corinthian and a Gothic stove: as samples of the perfection of the castings, the style and cheapness of the finished article.

6. Stags and beams: as samples of a casting from a real stag's head, for model.

7. Two deer-heads: also cast from real heads.

8. Several articles of art and ingenuity, including a lady's fan made of cast-iron, to show the sharpness of the casting, the art of tempering and gilding the same. A work and a fruit basket: exhibited for the beauty of the castings. A horned beetle, and salamander letter-presses: castings from the insect, for model. A wild boar: sample of good casting, modelled from nature.

780 The Ducal Foundry Inspection, *Rübeland, Brunswick*—Manufacturers.

Marble slabs, made of the marble found near Rübeland, principally black, gray, and red. It is obtained in blocks of nine feet in length, and five feet in breadth.

Two cast-iron stereotype plates, and a Bible printed from the same.

[The slabs of marble here exhibited are of excellent quality and considerable size. They are from quarries of great extent, and the obtaining and polishing the marble is a source of occupation to a large population in part of the duchy of Brunswick.—D. T. A.]

781 Roempler, J. S., *Erfurt*—Manufacturer.

India-rubber elastic braces and watch-guards.

Silk and half-silk shoe stuffs, mixed with India-rubber; shoes made of the same material. The materials employed are caoutchouc, with cotton and silk from Italy and England. Exhibited for superior quality, cheapness, and new design.

782 Walter, Ernst, & Son, *Brunswick*—Manufacturers.

Two easy chairs, and paper-basket, in basket-work, varnished.

783 Schreiber, J. C. G., *Merseburg*—Manufacturer.

A large superfine dressing-case, inlaid with silver. A variety of dressing-cases. Oval, round, seed, and sundry boxes. Visiting-cards. Albums, &c.

784 Ziegler Brothers, *Ruhla* — Manufacturers. (Agent in London, Mr. C. Holland, 41 Finsbury Circus.)

Tobacco pipes and bowls. Real meerschaum bowls, carved and plain; imitation meerschaum bowls.

Wood and clay pipes and bowls, and china pipes.

Real meerschaum bowls, coloured by being boiled in oil.

785 Boesche, C. J., *Magdeburg*—Producer.

Models. The cathedral at Magdeburg, with all the exterior and interior ornaments, made of limetree-wood, including the tomb of Bishop Ernest. The roof of the Cathedral.

The beautiful fountain at Nüremberg, by Schönhofer. Original model of a spring.

786 Jacob, Heinrich, *Schmölln, Duchy of Saxe Altenburg.* (Agent in London, Mr. Theodor Winckler, 16 Sidney Street, Commercial Road, East.)

An oil-painting on iron plate, fire-japanned and varnished, representing "Idyl," painted after Nicholas Berchem; another, representing "St. Magdalen," painted after Maes.

787 Jacoby, F. A., *Brunswick*—Modeller. (Agents in London, Messrs. Jonas, Simonson, & Co.)

Silver hunting-cup, with embossed and chased work. Lion's head (marble-plaster). A cast-iron horse, in a leaping attitude, as a head-piece to a clock. Cast-iron horse.

788 Stockman, W., & Co., *Brunswick*—Manufacturers.

Varnished paintings on tin-plates, in gilt frames.—"The Education of Mary," after Rubens. "Madonna, called La Perla," after Raphael. "The Virgin of Madrid," after Murillo. "The Messenger," after Kalisch. "Nerila," after André.

789 Trümplemann, August, *Ilsenburgh*—Modeller.

Pictures and transparencies.

790 Verein, Landwirthschaftlicher, *Sangerhausen*—Producer.

Samples of seed and hemp.

791 Zirkenbach, *Raguhn, Duchy of Anhalt Dessau*—Manufacturer.

Specimens of woollen cloth.

792 Hauch, A., *Halle on the Saale*—Manufacturer.

Specimens of sundry articles manufactured from hemp, consisting of pouches, bell-pulls, saddle-girths, &c.

793 Bauch, F. T., *Greiz, Reuss* — Manufacturer. (Agents in London, Messrs. H. Oppenheim & Co., 15 Addle Street, City.)

Various pieces of Thibet, green and drab; cashmere, nacarra; satin, nacarra; mousseline-de-laine shawls.

794 Kausche, G., *Brunswick*—Inventor and Manufacturer.

Sundry fancy articles, embroidered with gold, silk embroidery, silver, pearls, &c.

795 Kuehnemund, J. G., *Ronneburg*—Manufacturer.

An improved harrow.

796 Lux Brothers, *Ruhla, Saxe Gotha*—Manufacturers.

A large assortment of meerschaum and other pipes.

797 Weimar's Son, *Jena*—Manufacturer.

Four pieces of élastique for overcoats, made from raw Thuringian wool.

798 Harrass, P., *Suhl*—Manufacturer.

Sundry articles made of wood.

799 Burbach Brothers, & Co., *Hoerselgau, near Gotha*—Manufacturers. (Agent in London, T. Peterson, Water Lane.)

Two pieces of woven fire-engine hose, made from German and Italian hemp.

800 Selenka, J., *Brunswick*—Inventor and Manufacturer.

Gilt and fancy leather and paper articles, portfolio.

801 Blancke, E., *Naumburg*—Manufacturer.

Double-barrelled gun; joint bullet rifle, with all appurtenances.

802 Sommermeyer & Co., *Magdeburg*—Inventors and Manufacturers.

Iron fire-proof safe, with double doors, of a novel construction.

803 Graff, W., *Münchenhoff*—Producer.

Stuffed sheep. Fleece of wool.

804 Association of Manufacturers *at Sonnenberg, Duchy of Saxe Coburg and Gotha.*

Tableau of plastic work representing a rural fête, held at Castle Florence, the country palace of the Duke of Saxe-Coburg Gotha, the residence of H.M. the Queen when on a visit to the Duke, and the place where H.R.H. Prince Albert was born. This tableau contains about 400 moving figures, bands of music, &c.

805 Hutschenreuther's, F. A., & Sons, *Wallendorff*—Manufacturers.

Specimens of glass, consisting of a lustre, sailing-vessel, fruit-basket, grape-basket, and strawberry-basket.

806 Schramm, J. L. F., *Dessau*—Manufacturer.

Samples of oil for watches, prepared from vegetable substances.

807 Dietrich & Son, *Poessneck*—Manufacturer.

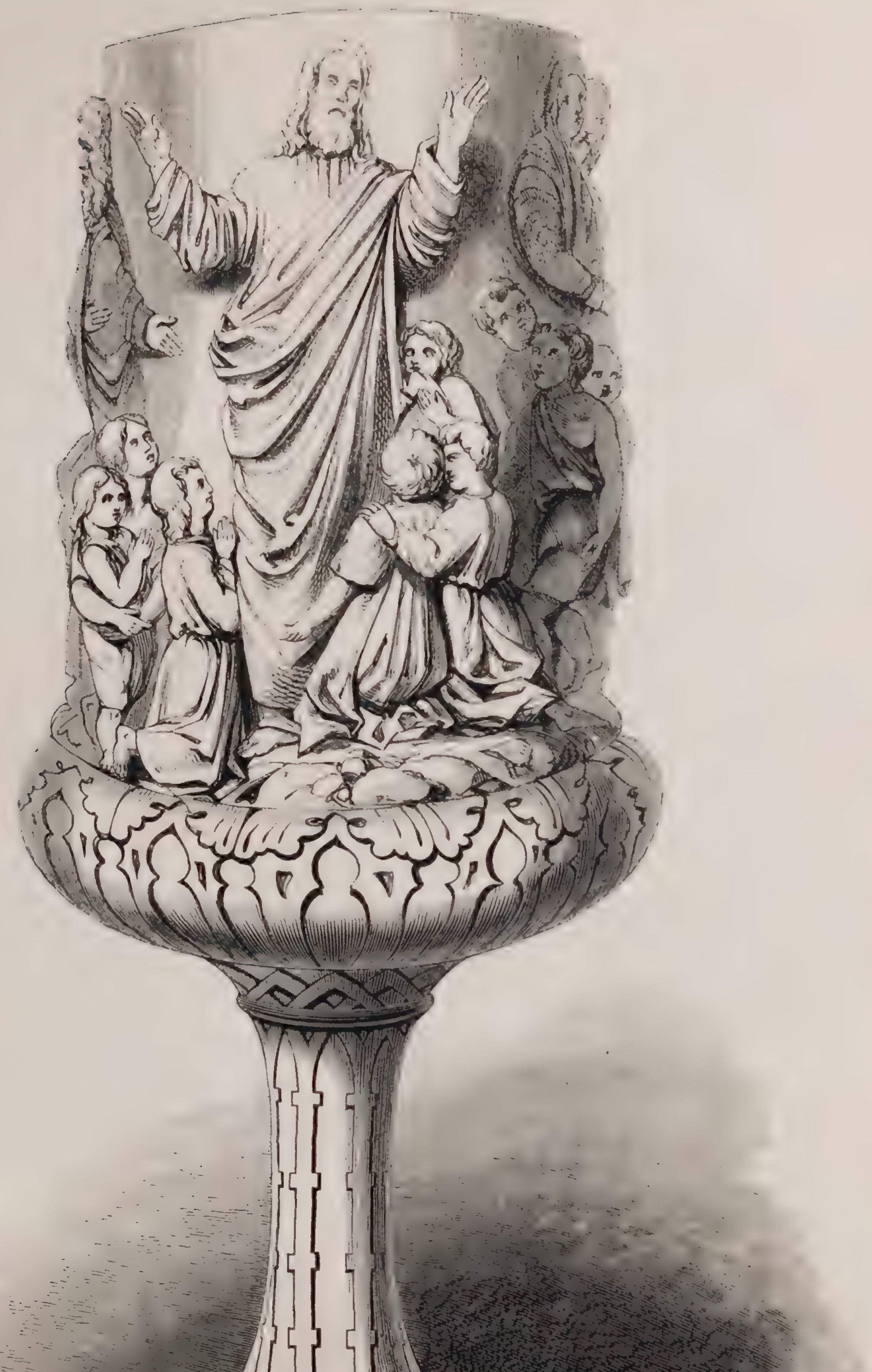
Specimens of flannel of different colours.

808 Goebel, F. D., *Wallendorff*—Manufacturer.

An assortment of articles in porcelain and glass.

809 Schmidt, C. H., *Poessneck*—Manufacturer.

Twelve coloured transparencies for lights, consisting of a wax composition, with frames.



CARVED IVORY GOBLET. L. W. SCHULZ. MEINENGEN, PRUSSIA.

810 Burckhardt Brothers, *Eisfeld*—Inventors and Manufacturers.

Four paintings on glass, consisting of a Madonna, the Holy Family, both after Raphael; the Holy Family, after Vandyke; and a Madonna, after Murillo.

811 Schulz, L. W., *Meiningen*—Inventor and Carver.

An assortment of sundry ivory cups, and other works of art.

[It is in Germany only that those finished and highly-artistical works, carved in ivory, are produced at low prices. Consequently, the whole trade in this branch of industrial production may be said to be in German hands. The magnificent works may here be more particularly instanced that have been forwarded from Wessen, Wurtemberg, Nassau, and Meiningen.]

812 Heinig, J. G., & Sons, *Altenburg*—Manufacturers.

Samples of string and twine.

813 Foese, G., *Halle*—Producer.

Samples of bristles.

814 Dahlheim, J., *Salzwedel*—Manufacturer.

An assortment of cotton goods.

815 Conta & Boehme, *Poessneck*, *Saxe Meiningen*—Inventors and Porcelain Manufacturers. (Agent in London, J. Kendall, 8 Harp Lane, Great Tower Street.)

Sundry articles of glass, porcelain, &c. Assortment of china ornaments.

816 Bruhm & Naegler, *Gera*—Manufacturers.

Various assortment of woollen goods.

817 Kummer, W. L., Widow, *Weissensee*—Manufacturer.

Sundry toys and fancy articles.

818 Sommer, C. F., *Erfurt*—Manufacturer.

Two money-bags, with and without seam, of Thuringian flax and hand-weaving.

819 Wirth, F. E., *Merseburg*—Manufacturer.

A large collection of patterns of cane and whalebone whips for driving.

820 Bodemer & Co., *Eilenburg*—Manufacturers.

Various assortment of cotton goods.

821 Jannasch, H., *Bernburg*—Manufacturer.

An assortment of earthenware, consisting of a vase, water-pots, coffee-pot, and flower-pots.

822 Vieweg & Son, *Brunswick*—Printers.

Several works printed and published by the exhibitors, consisting of Graham's Chemistry, Henle's Pathology, and Knapp's Technology.

824 Diesel & Co., *Saalfeld*—Manufacturers.

A variety of oil colours, water colours, Indian ink, and painters' colours.

825 Cosack, Joseph, *Arnsberg*—Producer.

Lead and silver ore, sulphuret of lead, and sulphuret of zinc (black jack).

826 Augustin, H. F. L., *Halberstadt*—Manufacturer.

Sugar of lead in crystals, bottom pieces, and in groups of crystals.

[Sugar of lead, the salt of Saturn of the old chemists, is the acetate of lead, and is a compound of acetic acid and oxide of lead.]

827 Barre & Kuester, *Lübbecke*—Manufacturers.

Samples of wheat starch.

[Wheat, or common starch, is obtained by steeping wheat until fermentation has taken place, and the gluten removed; or, still better, by dissolving out the gluten with a weak solution of caustic soda, or other alkaline liquor. The starch is deposited at the bottom of the vessel, and is purified by washing and passing through fine sieves, to separate the bran.—W. D. L. R.]

828 Maennel, Friedrich, *Weissenfels*—Manufacturer.

A portfolio for newspapers, exhibited for the novel combination of wood and fancy work.

830 Bachoven & Vollschwitz, *Zerbst*—Manufacturers. (Agents in London, Brocklesby and Wessels, 4 Moscovy Court, Tower-hill.)

Samples of black hat plush, dyed in Germany. The silk imported from Italy.

831 Schmidt, J. C., *Erfurt*—Manufacturer.

Wax baskets and flower-pots.

832 Bäedeker, Julius, *Elberfeld*—Publisher.

The Holy Bible, for church and family use, in the German language, printed in very small type, bound and unbound copies.

833 Langner, H., *Halberstadt*—Manufacturer.

Paletot of nürz, with squirrel heads; muff and victorine, from polecat.

834 Royal Salt Works at *Schoenebeck*, *near Magdeburg*—Producer.

Sample of common salt, fine grain, and of middling grain, from the Royal Salt Works of Schoenebeck.

835 Arnold, Carl Heinrich, *Hesse-Cassel*—Manufacturer.

Ornamental paper-hangings: sized-pattern papering; papering with representation of German sports; satin hangings, patterns in velvet and gold; patterns of middle quality hangings; patterns of common hangings.

836 Jannasch, O., *Bernburg*—Proprietor.

Samples of vinegar-spirit and medical vinegar, produced by the exhibitor.

837 Devisse, Napoleon, *Berlin*—Artist.

Column in Venetian and Florentine mosaic, mounted on iron.

Sphere in Venetian and Florentine mosaic, with pedestal.

Octagon and round table, with feet of Florentine, Roman, and Venetian mosaic, enclosing in its interior a mechanical contrivance.

Sexagon table, in Florentine, Venetian, and Roman mosaic, with feet, enclosing in its interior a mechanical contrivance.

Sphere, containing all the letters of the alphabet, in Venetian and Florentine mosaic.

Venetian and Florentine column, with the portrait of H.R.H. Prince Charles of Prussia, basso-relievo in the centre, mounted on iron.

838 Spinn & Menke, *Berlin*—Upholsterers.

A highly-finished bookcase, the front of nutwood, the inside of oak, with bowed glass doors.

839 Gerhardt, Al., *Berlin*—Cork-cutter.

Pictures and articles executed in cork-work; with gold and silver chasings.

840 Wagner, J., & Son, *Berlin*—Jewellers.

Table ornament in shape of a fruit-dish, four feet and a half in height, representing the several degrees of civilization among mankind.

This ornament is represented in the accompanying Plate.

[In the department of burnished works in gold and silver, &c., the Germans are excelled by the prodigious opulence and splendour of England and France. The German market, in fact, is too poor and too contracted to admit of its maintaining any competition in this branch of industry with either of those wealthy countries. But, in point of taste and elaborate and scientific execution, the Zollverein is not behind.

Berlin, Hanau, and Dresden, have furnished contributions to the Great Exhibition, amply sufficient to confirm this opinion. In support of it, attention may be directed to the silver work by the present exhibitor which stands before the Zollverein Central Hall.]

841 Zeitz, J. F., *Berlin*—Furrier.

A blue-grey paletot, lined with the skin of the Virginian pole-cat.

A camail of nürz tails, consisting of 6,391 pieces, with light-coloured silk lining.

842 Blankenstein, *Potsdam*—Inventor.

Rosewood box, with carved frame, for gloves.

843 Schuer, Dr., & Köhring, *Brandenburg*.

Chemical productions.

844 Zschille, J. C. & K., *Frankfort-on-the-Oder* (31 Finsbury Square)—Manufacturers.

Different samples of woollen cloths.

845 Laverdure, *Breslau*, Sculptor, and Von Minutoli, Councillor, *Leignitz*.

Twenty-two patterns of various Silesian marbles, from a newly-discovered quarry.

846 Friedenthal, C., *Giesmannsdorf*—Producer.

Newly-invented lasting dried powdered yeast, by the exhibitor.

847 Kielmann, *Posen*, Mason; and Von Minutoli, *Leignitz*.

Three mosaic floors in the old Roman style, of marble chips and glass paste, for flooring.

848 Gebauhr, C. J., *Königsberg*—Manufacturer.

Two rosewood pianofortes.

849 Weszely, *in Klein-Nuhr*.

Two specimens of elk-heads, modelled after nature.

850 The Combined Mining Works of Mansfeld.

Samples of the processes followed in the mining works of Mansfeld for obtaining copper and silver:—1. Bituminous marl slate, two slabs; 2. The same with variegated copper ore and fish impressions; 3. Sanderz; 4. Burnt slate, two slabs; 5. Slags of slate smelting; 6. Raw copperstone; 7. Powdered copperstone; 8. Powdered copperstone roasted; 9. Cemented silver; 10. Fine silver; 11. Slags of residuums; 12. Thin copperstone; 13. Black or raw copper; 14. Refined copper; 15. Fine copper.

Bars and turned samples of refined copper prepared from Mansfeld black copper by a process, without interruption, in cupola furnaces, with gas oxide of carbon, then hammered or turned.

851 Kröning, Dr., *Stollberg*.

Pattern sheet of substances woven and unwoven, which are gilt or silvered by a mechanical process.

852 Haenel, Julius, *Lauchhammer*—Sculptor.

Ostrich, giraffe, dog, and tiger, in plaster; full-sized female tiger, in plaster (after the original in the Zoological Gardens of London).

853 Prætorius, L., *Weissenfels*—Carpenter.

Tray, bordered à la rococ, of ebony wood, ornamented with foliage, the plate of mosaic wood, with inlaying of mother-of-pearl.

85 Gressler, E., *Erfurt*—Manufacturer of Chemical and Apothecaries' Apparatus.

Coal-zinc battery of twelve elements; twelve coal cylinders. A machine for spreading plasters. An economical furnace, applicable to apothecaries' laboratories.

855 Schilling, Valtin Chr., *Suhl*—Manufacturer.

Brace of target pistols, with fine grooved damascened barrels, for pointed bullets; fine locks, put together without screws; filigree iron furniture; buckles ornamented with dolphins; half-stocked, fluted, and adorned stocks, with all the instruments to charge and clean them; such as powder-flask, bullet-mould, case for percussion-caps, measure for charge, oil flask, trigger, screw-driver, and ramrod—all in a box, lined with velvet.

856 Royal Saltery, *Duerrenberg*—Producers.

Samples of coarse and refined salt.

Five pieces of brown coal, shaped by a pressing-engine. The engine by A. Milch, Cologne.

857 Heinrigs, J., *Cologne*.

A caligraphic tableau, representing the Queen of England.

858 Farina, Johann Maria, *opposite the Julich's Place, Cologne*—Manufacturer.

Samples of eau de Cologne of one quality, in a Gothic case.

859 Zanoli, Carl Anton, *Cologne*—Manufacturer.

Samples of eau du Cologne.

860 Gammersbach Brothers, *Meckenheim, near Bonn*—Manufacturers.

Specimens of leather and varnish, exhibited on account of their excellent flexibility and polish.

861 Moser, A., & Co., *Aix-la-Chapelle*—Manufacturers of Calf-skin for Shoes.

A double planing machine on a new construction, invented by the exhibitors.

862 Siegfried & Waldthausen, *Burtscheid*—Manufacturers.

Twelve pieces of twilled cloth and satin-de-laine.

863 Hösch, Eb., & Sons, *Düren*—Manufacturers.

Rolled zinc-plates for glazing paper. Raw material from the Rhine provinces.

864 Scheibler & Son, *Montjoie*.

Various woollen stuffs for trousers, and loose carded woollen goods.

865 Bötcher & Engel, *Imgenbruch*—Manufacturers.

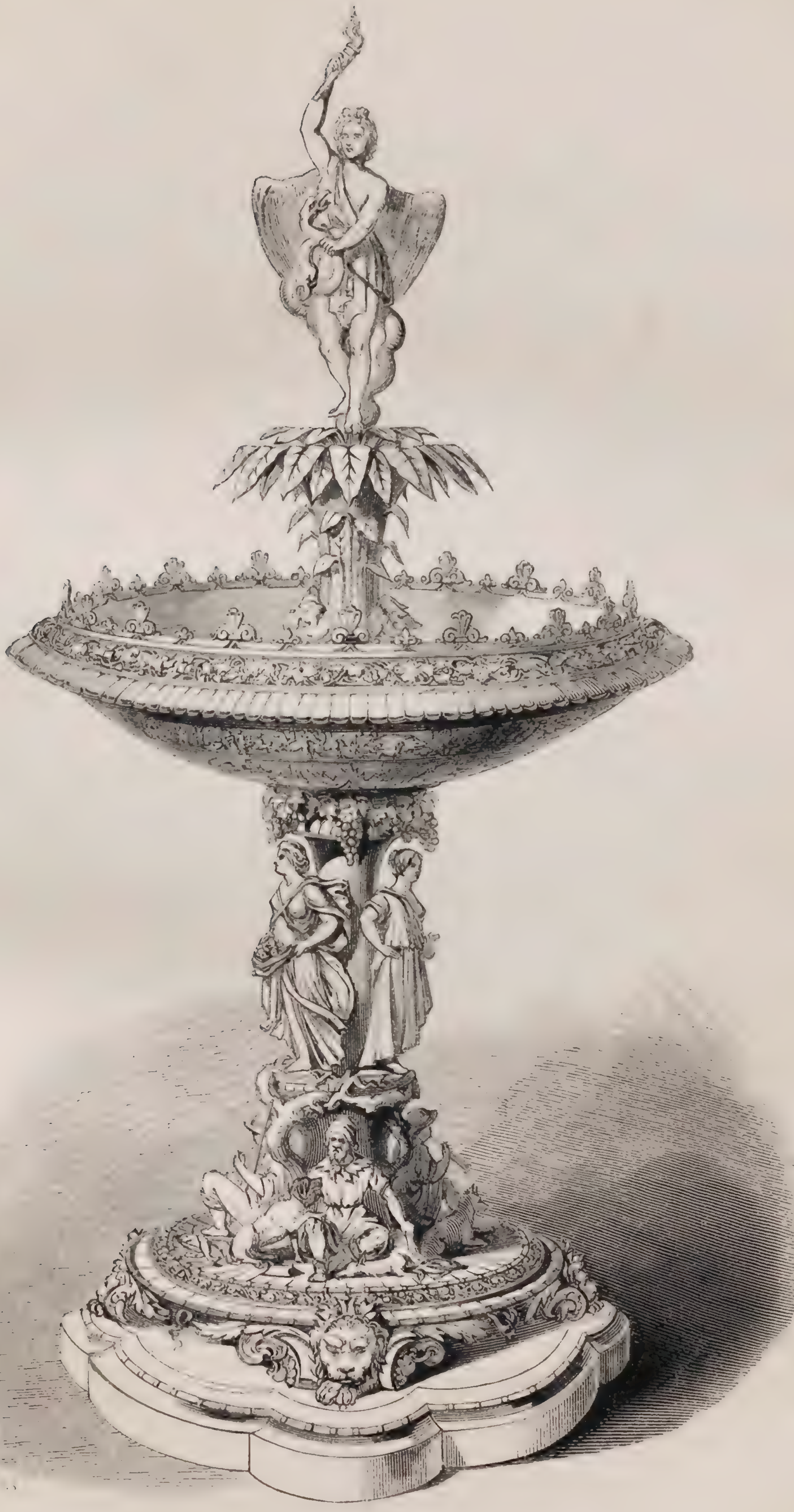
Fancy stuffs for summer and winter trousers, manufactured partly of German, Australian, Cape, and Odessa wools.

866 Delius, C., *Imgenbruch*—Manufacturer.

Woollen stuffs for trousers and paletots.

867 Mertens, H. J., *Imgenbruch*—Manufacturer.

Different stuffs for coats and trousers.



A FOUNTAIN, IN ELECTRO PLATE. M. WAGNER. BERLIN.

868 Mertens, P., *Imgenbruch*—Manufacturer.
Different stuffs for coats and trousers.

869 Deinhard & Jordan, *Coblentz*—Importers. (Agents in London, Deinhard and Jordan.)
Samples of Rhine and Moselle wine.

870 Geyger, A., & Co., *Creuznach.*
Four bottles of Rhine and Moselle wine; "mousseux."

871 Michels, Fr. X., *Andernach.*
Two small basaltic lava millstones.

872 Gerresheim & Neef, *Solingen.* (Agents in London, H. & D. Sharpe, 26 Broad Street Buildings.)
An assortment of scissors, and a card with unfinished specimens.

873 Berg Brothers, *Wald.*
Eighty-five samples of scissors.

874 Hilger Brothers, *Lennep*—Manufacturers.
Piece of fine violet cloth; two pieces of fine black cashmere.

875 Leverkus, C., *Wermelskirchen.*
Different sorts of ultramarine.

876 Harkort, Christian, *Harkorten.*
Lumps of cadmium, lead, sulphur, manganese, alum, cast and rolled zinc. A shamoy-tanned wild buffalo-skin. Specimen of Russia leather. Various sorts of helmets for Prussian soldiers, both officers and privates.

877 Karcher, Fred., *Carlsruhe*—Manufacturer.
Tracing (or transparent drawing) paper, invented and patented by exhibitor.

878 Sommer, F., *Heidelberg*—Manufacturer.
Writing case in velvet; glove boxes in velvet, ornamented with ivory; writing desks; shaving cases; pocket-books, cigar and spectacle cases, porte-monnaies.

879 Spiegelhalter, G., & Co., *Neukirch, Baden*—Watch and Clock Makers.
A large musical clock, and several small ones.

879a Wehrle, H., & Steuert, *Neukirch, Baden*—Watch and Clock Makers.
A clock without weights, pendulum, or any visible works. A self-acting organ, with four barrels.

880 Schulz, Joseph, *Meiningen*—Carver in Ivory.
Specimen of ivory snuff-boxes, cigar-cases, walking-stick knobs, knives, daggers, &c.

881 Schulz, *Wilhelm, Meiningen*—Carver in Ivory.
Various articles in ivory, consisting of note-book, porte-monnaie, card-cases, snuff-boxes, with devices, cigar-cases, &c.

882 Diesel & Co., *Saalfeld.*
Oil, water, and other colours, Indian ink, &c.

883 Heimburger, *Sonderhausen*—Joiner.
Table of Jacaranda wood, inlaid with mother-of-pearl, metal, and ivory, containing twelve scenes from Shakspeare, and a portrait of the poet.

884 Schütze, Andrew, *Frose, near Aschersleben*—Manufacturer.
Two pieces of fur made of marmot's skin.

885 Engel, Ph., *Hanau*—Engraver.
Specimens of new productions for the printing press, with a few original copies, exhibited on account of the superior workmanship, which enables the printer to imitate lithographic prints.

886 Reiffert, J. C., *Bockenheim*—Coachmaker.
Various models of railway carriages.

887 Gleichauf, J. B., *Hanau*—Gunmaker.
A needle-pistol with twelve barrels.

888 Keller & Co., *Birkenfeld, Oberstein;* 88 *Hatton Garden, London;* and 62 *St. Paul's Square, Birmingham.*

A tea-service, consisting of forty pieces, in fine red cornelian, twelve tea-spoons in white cornelian, three vases in red cornelian and onyx, two snuff-boxes in onyx, three mounted jewel boxes of fine green moss agate, and two etuis containing samples.

889 Wild & Robinson, *Birkenfeld, Oberstein;* and 51 *Hatton Garden, London.*
Bronzes, flower-vases, bracelets, &c., of agate.

890 Görlitz, L., *Idar, Birkenfeld.* (Agent in London, O. Frauenknecht, 80 Bishopsgate Street Within.)
Box, necklace, plates, &c., of agate.

891 Eifler, W., *Idar and Oberstein, near Mainz*—Worker in Agate. (Agents in London, Nestle and Huntsmann, 6 Great Trinity Lane.)
Samples of agate work.

892 Meyern-Hohenberg, Louise von, *Coburg.*
A tabernacle of Serravezza marble, in the form of a house in the Byzantine style, with scriptural devices and inscriptions.

893 Sommer, F., *Jauer, Silesia*—Inventor.
A wind instrument (the Sommerophone). This instrument has a compass of four octaves from E to E.

894 Janda, J., *Berlin.*
A statuette of Shakspeare, carved in wood.

895 Stolle, Dr. Edward, *Berlin.*
Geographical map of the beet-root sugar industry in Europe.

896 Krieg, J., *Odelshofen, Baden.*
Specimens of Rhenish slit hemp for ropes and cords.

897 Egloffstein, Count. (Agents, John Anderson & Sons, 65 Old Broad Street, London.)
Eve and the Serpent, a statue in marble executed by Van der Ven at Rome.

BAVARIA

Royal Commissioner in London, Dr. Schafhautl, 5 *Albion Street, Hyde Park Terrace.*

Nearly one hundred exhibitors from Bavaria have sent their contributions to the Exhibition. The section Machinery is not represented by these articles, but the other three sections are illustrated in various directions by the specimens sent from different towns. A considerable manufacture has sprung up in Fürth, a Bavarian town, for bronze powders, tinsel, and coloured foils. These are employed in the arts in various ways: no less than ten or eleven exhibitors out of the number stated appear in the capacity of manufacturers or producers of these articles. The manufacture involves a considerable amount of skill, and is in many respects a chemical process. Ultramarine is likewise prepared in considerable quantities, and with much success, by Bavarian manufacturers. The agriculture of the country is represented by wheat, barley, &c. Several exhibitors are producers of philosophical and musical instruments, and an interesting collection of these objects is brought together. The cotton, silk, and flax manufactures also appear, together with some articles of cotton and caoutchouc, forming a sort of elastic material for underclothing. Specimens of ornamental glass, and a fine collection from the Royal Porcelain Manufactory, near Munich, of objects of high interest as works of design, and as specimens of the ceramic art, are exhibited. A number of finely-painted vases, and some pictures on porcelain, are shown. The specimens of ivory goblets exhibited are also very beautiful. The manufactures of marquetrie and parquetrie from Munich, and candelabra of stag's horn, also deserve notice. Some results of a galvano-graphic process are exhibited, which bear a resemblance to a similar process carried on in this country. It is also deserving of notice that there is a specimen of engraving by the electric current as applied to etching purposes, with prints from the plates, indicating that in Bavaria, as in this country, this singular fact has been observed. In Class 30, United Kingdom, similar specimens on steel plates are produced by the British inventor. The colossal lion in the Nave, which is in the same state as when removed from the mould, is an evidence of the success with which the art of casting in bronze has been practised at Munich. Other statues exhibit a beautifully chaste and softened effect, produced by the skilful use of the chisel.

The principal towns exhibiting in the Bavarian collection are Munich, Nürnberg, Fürth, Hof, Bamberg, and Wurzburg.—R. E.

1 **Benda, George**, *Fürth, near Nürnberg*—Producer.

Specimens of bronze powder, and bronze colours, in a small case.

2 **Birkner & Hartmann**, *Nürnberg*—Producers.

Specimens of bronze colours and leaf metal.

3a **Brandeis, I.**, jun., *Fürth, near Nürnberg*—Manufacturer.

Samples of bronze powder, of leaf-metal, and bars of molten metal.

3b **Meier, J. C.**, *Fürth, near Nürnberg*—Producer.

Specimens of metal, gold, and bronze colours.

4 **Fuchs & Sons**, *Fürth, near Nürnberg*—Producers.

Various specimens of metallic leaf; bronze powder; rolled orsedew (tinsel), and shavings (waste of leaf-metal).

[Bronze powders are prepared in various ways; some of them mechanical, and some chemical. Dutch metal and mosaic gold, which is only a fine kind of brass, are ground to a powder; copper is precipitated by clean iron plates from a solution of the nitrate of copper; it is then dried and exposed to different degrees of heat, so that, by becoming more or less oxidized, various shades of colour are produced. Plumbago, cinnabar, and other metallic colours are mixed with the bronze powders, to produce variety of tint.—R. H.]

5 **Linz, Johann Leonhard**, *Fürth, near Nürnberg*—Producer.

Specimens of white leaf-metal made of English Banca tin.

6 **Lepper, Gustav**, *Fürth, near Nürnberg*—Producer.

Fifty different samples of bronze powder, various colours. Metal-leaf, various colours.

7 **Stoeber's Son, Ludwig**, *Fürth, near Nürnberg*—Producer.

Specimens of bronze colours in small bottles.

8 Boerer & Porzelius, *Ratisbon*—Producer.
Specimens of extract of nut of the *Quercus cerris.*

10 Gerstendörffer, J. J., & C. Kubler, jun., *Fürth, near Nürnberg*—Producers.
Samples of beaten metal (Dutch metal).

11 Kübler, G., *Fürth, near Nürnberg*—Producer.
Samples of beaten metal (Dutch metal).

11a Ammon, J. P., *Nürnberg*—Producer.
Specimens of gold and silver wire.

11b Fuchs, H. M., *Nürnberg* (Agent in London, W. Meyerstein, 15 Watling Street)—Producer.
One pound of soft and malleable brass wire for metallic cloth, length 76,000 feet. One pound of extra fine chalybeate wire for mine lanterns, length 41,000 feet.

12 Gademann, Henry, *Schweinfurt*—Producer.
Specimens of blue, black, and green ultramarine.

[True ultramarine is obtained from the variegated blue mineral, called *Lazulite* (*Lapis lazuli*), by a tedious process; the blue colouring matter combining with a resinous mass, and the other earthy matters are washed away.

An artificial ultramarine is formed by heating to redness a mixture of china-clay, sulphur, and carbonate of soda; from which it may be inferred, that ultramarine is a compound of silicate of alumina and silicate of soda.—R. E.]

13 Rau, I., *Fürth, near Nürnberg*—Producer.
Specimens of bronze powder and gold leaf metal.

14 Sattler, Wilhelm, *Schweinfurt*—Producer.
Specimens of varnish colours in small glass bottles. Extra fine printing ink.

15 Schruck & Uhlich, *Bamberg*—Producers.
Eighteen specimens of ultramarine.

16 Stoeber, J. J., *Fürth, near Nürnberg*—Producer.
Specimens of various bronze colours.

17 Wolff & Co., *Schweinfurt*—Producers.
Specimens of ultramarine. Green ultramarine.

18 Hammerschmidt's Son-in-Law, *Ratisbon*—Producer.
Samples of Bavarian wheat, grit, fodder, flour, bran, corn, &c. Wheat-meal, pollard, rye, rye-meal, provender flour.

19 Erich, Christian August, *Munich*—Producer. (Agents, Gillies & Horne, 17 Mark Lane.)
Samples of Bavarian wheat; wheaten grits; and meal and square barley. Exhibited on account of their cleanness and fine quality.

20 Heinlein, C. V., *Bamberg*—Inventor.
A light, highly-finished gun, with Damascene barrel, engraved in the old German style, with emblems, &c., representing the art of projection from its first invention to the present time; with ebony stock, inlaid with mother-of-pearl, with silver apparatus; covered lock of a peculiar and novel construction; firing quickly, and carrying to a long distance.

21 Kuchenreuter, J., Adam, *Ratisbon*—Inventor and Producer.
1. A pair of extra fine, highly finished pistols, inlaid and ornamented with gold; the barrels are engraved and "blued," hair dressed and rifled in a peculiar manner, the secret of which has been solely in possession of the exhibitor's family for more than one hundred years, The barrels are of German steel, with patent screws. peculiar apparatus for assisting the aim at target shooting, open percussion locks, executed in steel, with hair trigger, the stocks of nut-wood, carved in relievo, with complete apparatus.

2. A pair of extra fine pistols, of the same quality, though ornamented in a less costly style.

The peculiarities of these two pairs of pistols consist in the following:—When loaded with three-quarters of a drachm of powder of ordinary strength, and the ball rammed down with a greased patch, they shoot with the accuracy of a rifle at 25 and 50 yards; and by raising the sight, but without additional powder, will, at a distance of 80, 160, or even 240 yards, send a ball through a deal plank half an inch thick, when the ball will be as flat as a shilling, if an iron plate is placed behind the deal plank. Moreover, the grooves of the barrel, although as fine as a hair, are said not to wear out; the pistols may be used daily for years, without its being necessary to have them re-rifled.

22 Baader, Johan A. & Co., *Mittenwald on the Isar*—Producer.
Two violins; tenor; and violoncello. Exhibited on account of the fineness of tone and beauty of the wood.

23 Boehm, T., *Munich*—Inventor and Manufacturer.
A cylindrical silver flute, stated to be of superior tone, and equal and correct tuning; these advantages are claimed to be attained by the following improvements:—Correct proportions in the construction of the tube, a new arrangement of the key-mechanism, which allows the holes to be made as large as required, and a new form of embouchure, of gold, which offers no impediment to the vibrations of the tube.

Flute d'amour (in B flat), of German silver, of the same construction.

Model of a patent hautboy, constructed on the same principles, with improvements since made by the inventor.

24 Eisenmenger, G., *Fürth, near Nürnberg*—Manufacturer.
Collection of opera-glasses, spectacles, and eye-glasses, lorgnettes.

25 Ertel, Traugott, & Sons, Proprietors of the Reichenbach Mathematical and Mechanics' Institute—Inventors and Producers.
Astronomical universal instrument; constructed on a new principle; with telescope.

[Munich is celebrated on the continent for the skill of the makers of philosophical and musical instruments, carrying on their occupation at that place. Some of the optical instruments are of a high order of excellence, and are consequently in much use for those delicate and accurate manufactures carried on in the practical pursuit of the science they represent.—R. E.]

26 Issmayer, I. M., *Nürnberg*—Producer.
Collection of magnetic articles, toys, &c.

27 Jordan, J. F., *Fürth, near Nürnberg*—Manufacturer.
Flexible syphon, ear-tubes, pipes, &c.

28 Kapeller, L. & Son, *Hafnerzell, near Passau*—Manufacturers.
Various sorts of black crucibles for melting gold, silver, iron, steel, &c.

29 Klinger, C. Abel, *Nürnberg*—Producer.
Terrestrial and celestial globes, with stands and compasses.

30 & 31 Merz, George, & Sons, *Munich*—Inventors and Manufacturers.

Refractor, having 45″ apert., 48″ focal length, for variable latitude; equatorially mounted.

Microscope, with various object-glasses and three eyepieces, for nine magnifying powers, from 20 to 1,800 times. The instrument is provided with a screw micrometer and the necessary apparatus for holding and illuminating objects.

32 Mechanical School, *Zweybrücken*. (Directed by Dr. H. Reinsch.)

Electro-magnetic apparatus, and electro-magnetic rotatory apparatus, containing a magnet capable of holding 50 lbs. weight.

[A very large amount of ingenuity has been expended on the attempt to apply the electro-magnetic force to mechanical purposes, in the room of prime movers. The experiments hitherto made have yielded hopeful but few practical results; and several instruments are exhibited which represent the various modes in which the principles of motion from the electro-magnetic agency have been applied. The practicability of obtaining motion cannot be denied, but its comparative economy is still to be demonstrated.—R. E.]

33 Neuner & Hornsteiner, *Mittenwald on the Isar*—Producers.

Violoncello, tenor, and violins. Fernambuck violin and violoncello bows.

34 Riefler, Clement, *Maria Rhine, near Nesselwang*—Inventor and Producer.

Case of improved mathematical drawing-instruments, in German silver.

35 Pfaff, Michel, *Kaiserslautern*—Producer.

Bombardon ophicleide in C, with four valves and mouthpiece. Trumpet in B flat, with three valves, four crooks, and mouthpiece.

36 Brentano, Pellouz, & Co., *Augsburg*—Manufacturers.

Patterns of silk cloth, with gold and silver; for furniture and church apparel.

Patterns of various stuffs and cloths, manufactured from *Bavarian silk*.

Samples of the silk.

37 Simon, Henry, *Zweybrücken*—Manufacturer.

Various assortments of silk plush.

38 Knorr, F., *Zweybrücken*—Manufacturer. (Agents in London, Stahlschmidt & Co., 14 Mark Lane.)

Five pieces of silk plush, for hats.

39 Braun, Leonhard, *Wunsiedel*—Manufacturer.

Specimens of Manilla damask made from cotton and Manilla hemp, mixed, for furniture and carpets.

40 Schutzmann, August, *Munich*—Producer.

Canvas, prepared for paintings, twenty-three feet by thirteen feet four inches.

41 Trendel J. J. & Sons, *Culmbach*—Manufacturers.

Linen damask. Striped half-linen cloth for trousers.

Fine white-linen satin; half-linen satin.

Half-linen cloth for trousers; the same of half-linen thread.

42 Gebhart Brothers, *Hof*—Manufacturers.

A large assortment of shawls and handkerchiefs, cotton and wool, and woollen.

Drawers, of cotton and caoutchouc.

43 Lienhardt, Frederich, *Hof*—Manufacturer.

Cotton goods; cotton mixed with wool.

44 Steinhauser, Heinrich, *Hof*—Manufacturer.

Shawls of wool, mixed with cotton.

Tartans of mixed fabric.

45 Griess, Louis, *Landau*—Manufacturer.

Girths for horses of bleached hemp; girths unbleached.

Halter, of red woollen thread; halter, of white hemp twist.

46 Mayer, Ignaz, *Munich*—Manufacturer.

Enamelled coach hides. Enamelled calf-skins.

Japanned shoe calf-skins. Curried bridle leather. Curried hog-skin for saddle seats.

47 Haenle, Leo, *Munich*—Producer. (Agent in London, Mr. Schick, 56 High Holborn.)

Silver and gold paper, plain and ornamental.

Bronze powder, and specimen of printing with bronze colours.

Samples of real gold paper borders, &c.

48 Escherich, Theodor, *Munich*—Manufacturer.

Various portfolios and cases, port-monnaies, cigar-cases, &c., in Morocco leather.

49 Kohn, Manuel T., *Main-Bernheim*—Producer.

Samples of sealing wax.

50 Sammet, J., *Marksteft*—Producer.

Specimens of black ink for copper-plate printing.

51 Praetzsch, Mina, *Hof*—Producer.

Specimen of embroidery in crape threads, representing "the Madonna."

52 Mayer, Emilie, *Aschaffenburg*—Producer.

Embroidery in silk, after a picture by Angelica Kauffmann.

53 Frank, Johann, *Ratisbon*—Producer.

Ladies' boots of satin and of leather and black cloth. Embroidered slippers.

54 Fehr & Eisenring, *Augsburg*—Producers.

Metal plates, with letters and characters in relievo, for the instruction of the blind.

54a Kaltenecker, J., *Munich*—Manufacturer.

Samples of textures of wires, hair, wood, and cane.

Sieve, with bottom and cover, of parchment.

Sieve, of parchment, for sifting gunpowder.

Triple sieve, for sorting.

Brass drum, with improved tuning screw.

Model of double gratings, for drying malt.

Vizors used in fencing.

55 Gradmann, A., *Erbach, near Homburg*—Producer.

Forty specimens of horse-shoes.

56 Jansen & Luehdorff, *Hof*—Manufacturers.

Fifty pieces of ginghams.

57 Kuhn, C. (Schmidner, E.) *Nürnberg*—Producer.

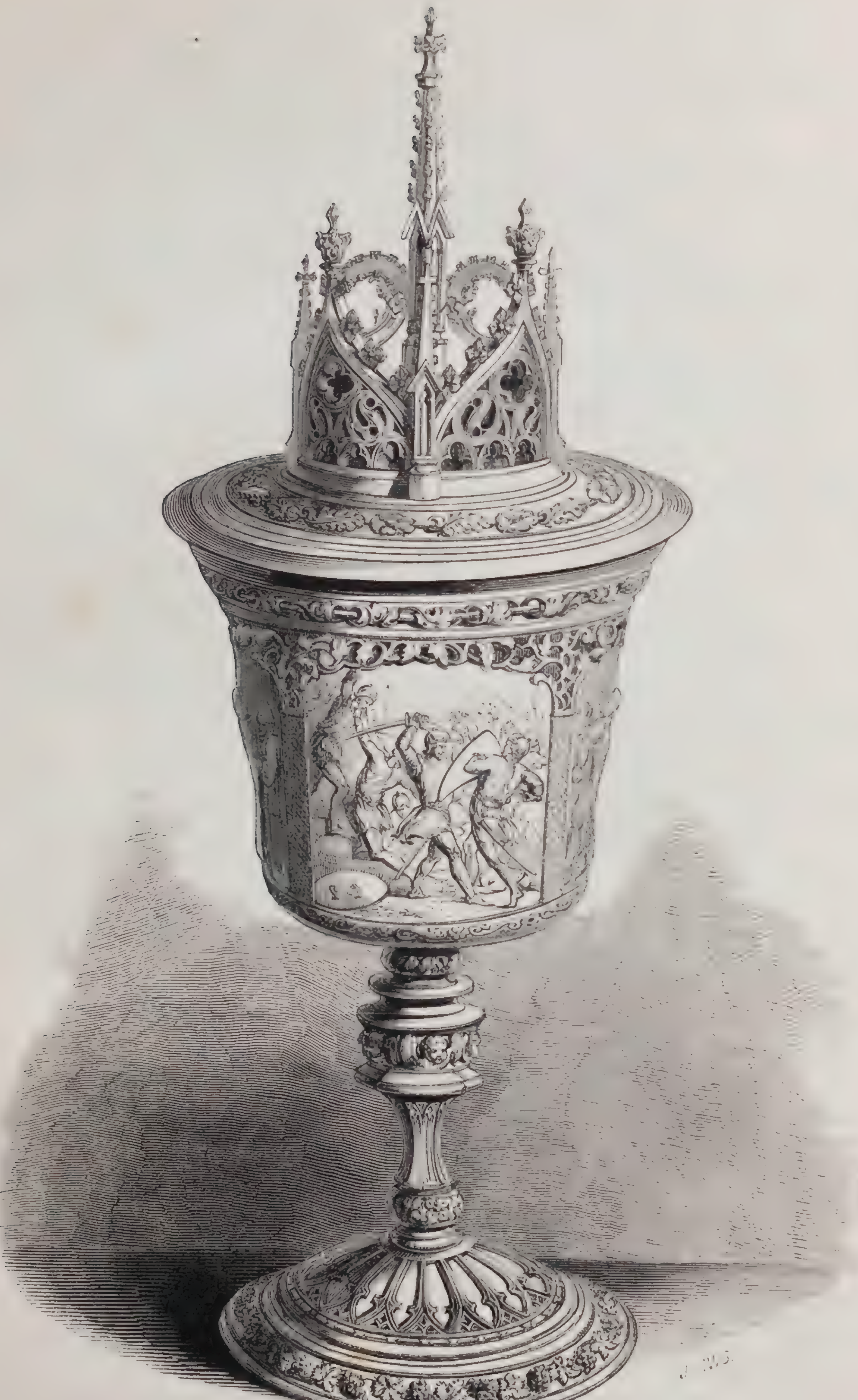
Patterns of gold and silver-plated and copper wire, spangles, &c.

58 Kullrich, Franz, *Munich*—Producer.

A casket with ornaments for ladies.

59 Troeltsch & Hanselmann, *Weissenburg*—Producer.

Patterns of gold and silver lace.



72.

CARVED IVORY GOBLET. BAVARIA.

60 Hechinger, H., *Fürth, near Nürnberg*—Manufacturer.

Mirrors of variously-tinted glass.

61 Heilbronn, Leopold, *Fürth, near Nürnberg*—Manufacturer.

Mirrors of half-white covered glass.

62 Neft, Mathias C. Von Reder, *Shleichach, near Eltmann*—Producer.

Specimens of white crown glass. Exhibited on account of its colour and lustrous reflection.

63 Reinsch, A., *Nürnberg*—Inventor and Producer.

Various objects of art, made of glass, transparencies, and two damascened looking-glasses.

64 The Royal Porcelain Manufactory, *Nymphenburg, near Munich.*

Porcelain.

Vase, with a picture after Micris.

Two vases, blue and gold. Vase, Byzantine style.

Goblet, decorations of gold and platina.

Pitchers for beer and wine. Hunting goblet.

Goblet, with a picture after Kaulbach, "Autumn."

Goblet, with a picture, "Recollections of Hohenschwangau," by Neureuther.

Goblets, various. Goblet, with portrait of Cornelius.

Flower-vases. Pair of the same, with busts of renowned artists.

Vases, with picture after Reidl. Small vases.

Flower-vases, with violet ground. Table services, for fruit.

Plates, with views of Rome and pictures after Kaulbach, "Reinecks Fuchs."

Pots with portraits of St. Hubertus, Madonna, and the Infant.

Figure of the Madonna. Picture after Albana, by Mr. Adler.

Picture after Raphael, the Madonna, painted by Mr. Legrand.

White Biscuit.

The eight departments of Bavaria, by Schwanthaler.

Eight busts of renowned men. Girl reposing.

Munich waiting-girl (bar-maid), by Kellnerin.

Statue of an emblematic figure of Bavaria, by Schwanthaler, gilded.

Brown Biscuit.

Two Tyrolese figures.

Clay.

Statues of Bavarian princes and renowned artists, by Schwanthaler.

Statues of renowned poets, by Schaller.

A specimen from this manufactory is represented in the Plate 172.

[The possession of a natural source of pure clay for ceramic purposes often determines the position of the works for its reproduction in the form of objects of art and utility. Some of the continental clays are extremely pure, and produce the very best description of porcelain. The commoner articles are also successfully made, though perhaps less so than in England. For a complete account of the ceramic art and its processes, reference should be made to Class 25 of the United Kingdom.—R. E.]

65 Held, Kassian, *Nürnberg*—Producer.

Tobacco pipes of Turkish clay with various designs; meerschaum; cigar tubes of the same material.

66 Adt Brothers, *Ensheim, near Zweybrücken*—Producers.

Various works in papier-maché, consisting of cigar-case, glove-box, work-box, cigar-cases, spectacle-cases, porte-monnaies.

67 Barth Brothers, *Würzburg*—Producers. (Agent—C. Kendall, 8 Harp Lane, Great Tower Street.)

Lady's bureau in renaissance style, inlaid with mosaics and allegorical representations.

Lady's work-table, in rococo style, inlaid with mosaics and allegorical representations.

68 Dessauer, Alois, *Aschaffenburg*—Manufacturer.

Samples of coloured and gold and silver papers.

69 Fortner, Francis X., *Munich*—Producer.

Marquetrie writing-table in old German or Gothic style, of rosewood, inlaid with different metals, mother-of-pearl and tortoiseshell, with portraits of Charles the Great, Frederic Barbarossa, Lewis of Bavaria, Rudolph of Hapsburg, and Maximilian I., with their escutcheons, a German maiden, squires, and armourers; with arm-chair in the same style.

Portfolio of rosewood, inlaid with different metals, mother-of-pearl, and tortoiseshell.

Portfolio in renaissance style; another in buhl style.

70 Mayer, J., *Munich*—Producer.

Two crucifixes.

The Virgin and Child.

Flower-vase, of carton-pierre.

71 Fleischmann, C. W., *Nürnberg*—Producer.

Anatomical and pathological casts in papier maché.

72 Fleisch, N., *Ensheim, near Zweybrücken*—Producer.

Various sorts of snuff-boxes, needle and cigar cases, in papier maché.

73 Hartmann, J. J., *Munich*—Producer.

Samples of parquetrie work for floors, of various woods; mirror frames, &c.

74 Baader, Ignaz, *Garmisch*—Producer.

Candelabra of stag horn, exhibited as a specimen of turnery.

75 Frank, Christian, *Fürth, near Nürnberg*—Producer.

Goblet carved in ivory, with relievos from the "Lay of the Niebelungen," 14 inches high. This goblet is represented in the Plate 72.

Chess-men cut in ivory, with chess-board and polished case, &c.

Spinning-wheel in ivory.

76 Hensteh, Jacob, *Lindberg, near Zwisel*—Manufacturer.

Specimen of wood for sounding-boards, from the Bavarian forest.

77 Lang, George (Heirs of), *Oberammergau*—Proprietor.

A large collection of ornaments and toys cut in wood, ivory, and alabaster.

78 Jacob, John, *Wurzburg*—Manufacturer.

New machines for extracting tea or coffee by steam. The water heated to boiling rises from the boiler into the glass and passes from thence through the narrow pipe to the lower space to extract the tea or coffee: as soon as the water is in the lower space, extinguish the lamp. As soon as the boiler is cool, the tea or coffee will be driven, by the pressure of the rarified air, through the strainer and the narrow pipe, into the glass, and from thence into the boiler, filtered and ready for drinking.

To make the tea or coffee stronger, the lamp must be relighted and the process repeated a second or third time.

The advantage in employing these boilers is obvious, as any quantity of tea or coffee can be prepared and the strength increased or decreased at pleasure. The mechanism is very simple and durable, very easy to use, and entirely free from the danger of being damaged.

79 **Birkmann, Mathew**, *Nürnberg*—Producer.

Patterns of black-lead pencils, of different degrees of hardness.

80 **Eichner, G. L.**, *Nürnberg*—Producer.

Varnished toys of tinned-iron plate.

[The town of Nürnberg has long been celebrated for the extent of its toy trade. These trifling objects become of great commercial importance, the demand being large and constant. They are made at an extremely cheap rate, and are consequently available for exportation to a considerable extent. They are sent to all parts of the world.—R. E.]

81 **Faber, A. W.**, *Stein, near Nürnberg*—Manufacturer.

Specimens of black-lead pencils.

82 **Rehbach, J. J.**, *Ratisbon*—Manufacturer.

Black-lead pencils. Case with black and red lead pencils. Boxes with crayons for drawing.

83 **Hagen, Michael**, *Munich*—Sculptor.

Goblet of ivory, carved with figures and arabesques representing a procession of bacchanals; the inside of gilded silver.

84 **Halbig, Johann**, *Munich*—Inventor and Producer.

Goblet, with figures, with the emblems of the German empire, in plaster of Paris.

A bust of Schlanders marble.

85 **Hanfstaengel, F.**, *Munich*—Producer.

Specimens of galvanography, combining the effects of the brush with those of the chisel, produced by the method invented by Professor Franz von Kobell, at Munich.

Original copper-plate, with the drawing in relief.

Secondary, or printing-plate, produced by galvanism.

Print from the latter plate.

86 **Kellner, Stephan**, *Nürnberg*—Producer.

Glass painting—a copy of the window, by Volkanimer, in St. Lorenz church, at Nürnberg.

87 **Ozann, Dr. G. W.** (Professor at the University), *Wurzburg*.

Engraving on a tin plate, produced by the action of the hydro-electric current; and prints taken from the plate.

[In Class 30 of the United Kingdom may be seen specimens, by a British exhibitor, of engraving by electricity upon steel plates, together with proofs from the plates. The same effect is here obtained upon a plate of tin, with the same results.—R. E.]

88 **Knoll, Conrad**, *Munich*—Sculptor.

Model of a goblet, in plaster of Paris, to be cast in bronze: "Loving and living on the Rhine."

The accompanying Plate 172 represents this goblet, with a specimen of porcelain from Nymphenburg.

89 **Leeb, Johannes**, *Munich*—Sculptor.

Two figures in Carrara marble—

1. Cupid sharpening an arrow; and
2. A girl (Innocence) playing with a nest of little Cupids.

90 **Miller, Ferdinand**, *Munich*—Producer.

Colossal lion, fifteen feet long and nine feet high—one of two which have been cast at the same time out of one furnace. This lion appears in the same state as when it left the foundry, being raw cast in bronze, showing the possibility of executing casts in one piece of almost any weight and size required. It is exhibited also as a specimen of the new method of the founder to preserve the pure natural metallic colour of the cast without being obliged to use the chisel. The adjoining Plate 15 represents this statue, and is accompanied by another, 49, which shows the position of the statue in this group, of which it forms a part.

Two statues, seven feet high, modelled by Schwanthaler, cast in bronze and finished with the chisel, representing specimens of the effects of the artificer's art of chiselling in producing a deadened surface:—

Libusa, Queen of the Bohemians, anno 700.

George of Podiebrad, King of the Bohemians. These statues are represented in the adjoining Plate 140.

91 **Muhr, Julius**, *Munich*—Producer.

Stereochromic picture upon mortar-ground, plastered on wood; a new method for producing indestructible paintings on walls; invented by J. von S. Fuchs, at Munich.

The medium for fixing the colours is "water-glass," a solution of a peculiar compound of silica and alkali.

Some large historical pictures in the new museum at Berlin were painted by Mr. Kaulbach, of Munich, after this method.

[In order to prepare a soluble glass, it is simply necessary to melt pure sand with a large proportion of alkali, and the glass thus formed, containing 30 per cent. of alkali, is soluble in boiling water. The solution may be used as an ordinary varnish, and applied to any surface which it is desirable to protect, but the soluble glass obtained in this way cannot be used for stereochromic painting. A glazed covering is left on the surface when dry.—R. E.]

92 **Schmidt, Carl**, *Bamberg*—Proprietor.

Paintings on porcelain, after Cornelius, Rembrandt, Lessing, Roekers, Van der Worft, Leonardo, and Watfers. An altar, with the Madonna del Sesto, after Raphael, with old German decorations.

93 **Zeiler, Franz**, *Munich*—Producer.

Silver fruit-plate in the form of a shell, in alto-relievo, representing Venus and Amor.

Two alto-relievos in silver, the one representing the storming of Belgrade, the other, the victory of the Bavarians over the Turks by the Elector Max Emanuel.

94 **Foltz, L.**, *Ratisbon*—Sculptor.

Model, in plaster, intended for a prize medal.

95 **Gienanth Brothers**, Proprietors of Iron Forges at *Hochstein, Bavarien Rhene-Palat.*

Iron for guns and railways.

Rolled and wrought-iron, rasping-plate iron, and iron wire.

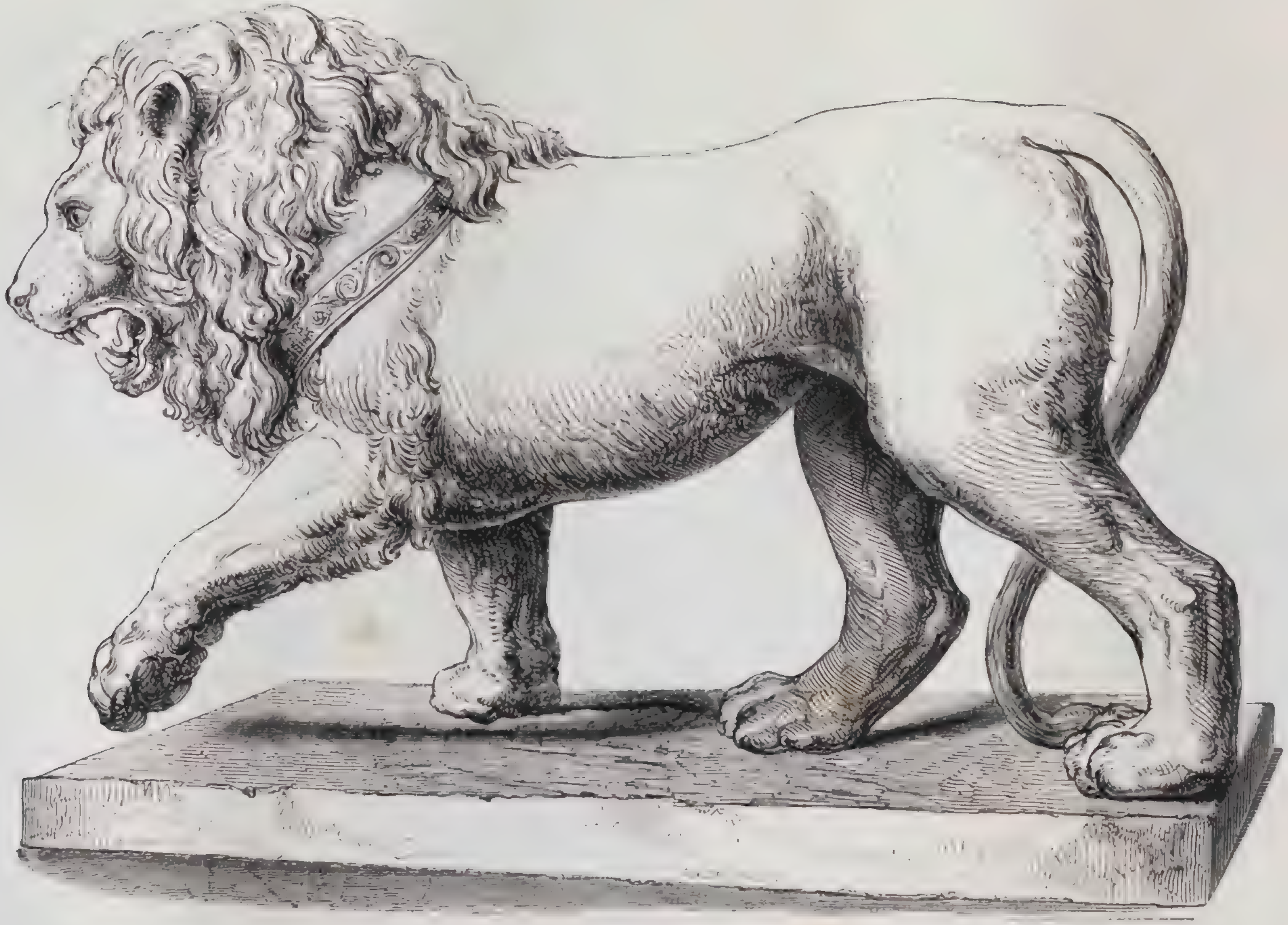
Various kinds of steel, bronze, gilt, and silver fancy articles.

96 **Weppler, C. L.**, *Ansbach*—Manufacturer.

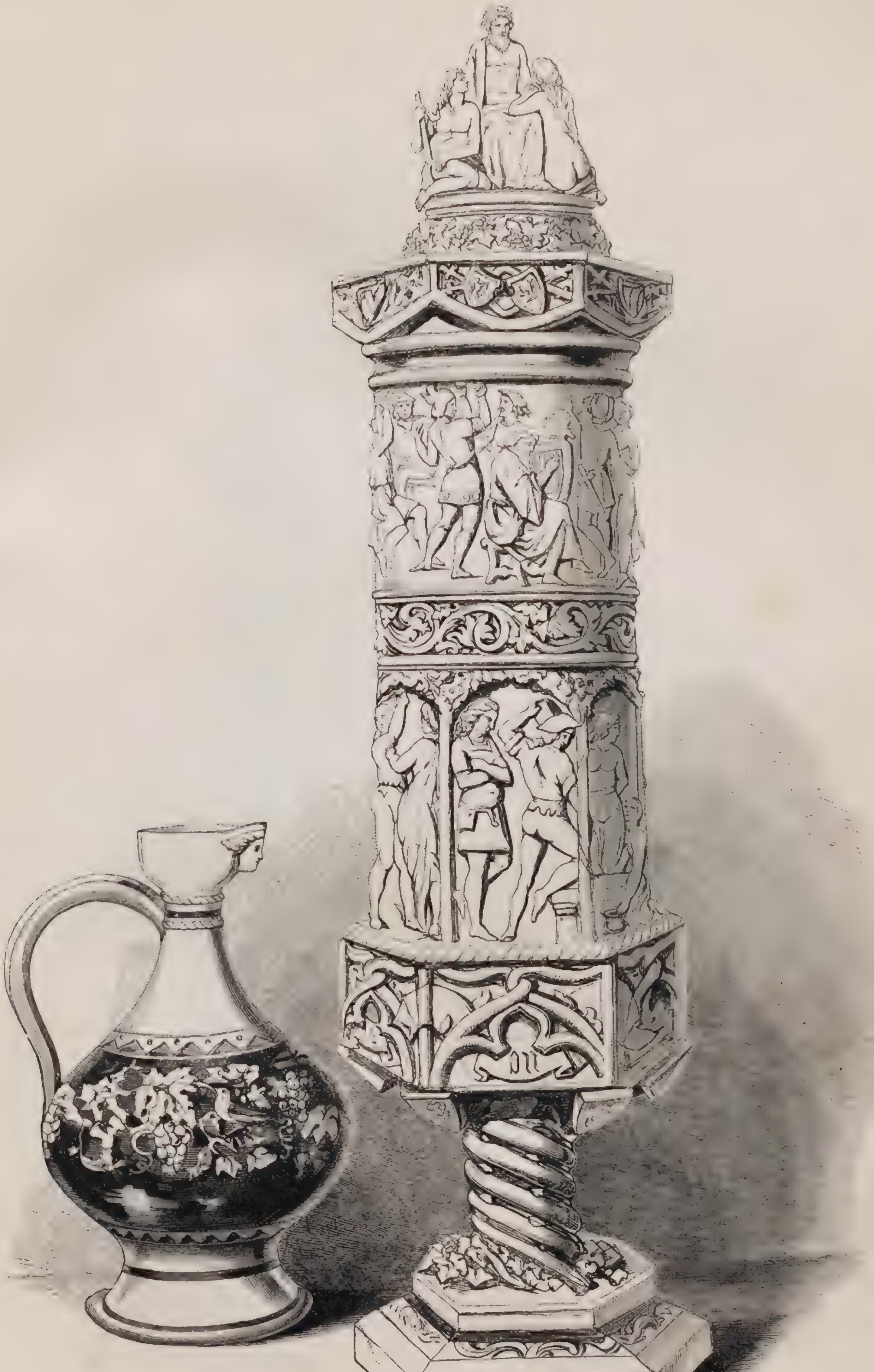
Fancy articles in straw mosaic.

97 **Neubronner, Gustav**, *Frankenthal in the Rhine, Palatinate*—Manufacturer.

Six children's dolls, elegantly dressed.

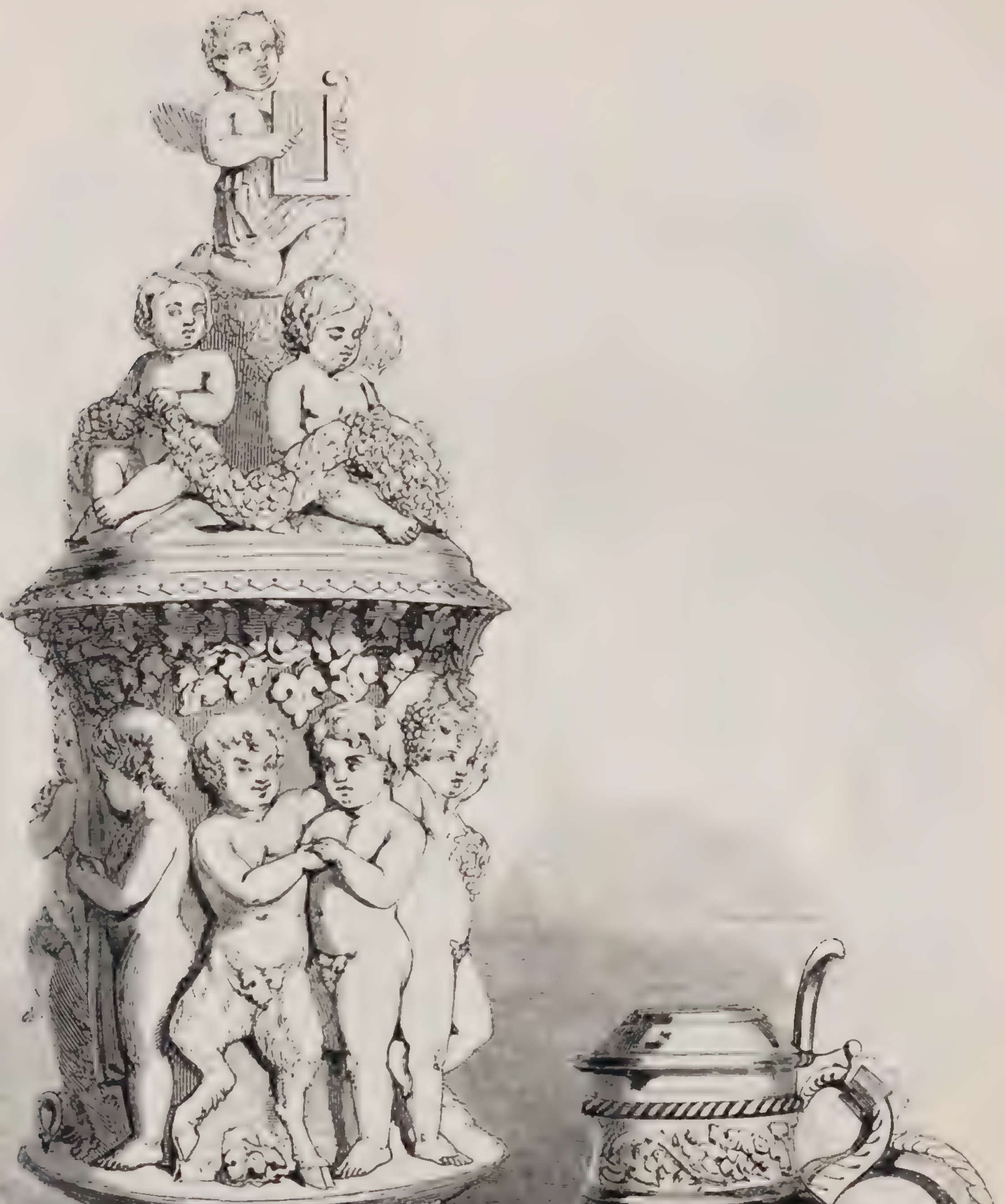


15. COLOSSAL LION, BY MÜLLER OF BERLIN.



PORCELAIN JUG. BAVARIA.

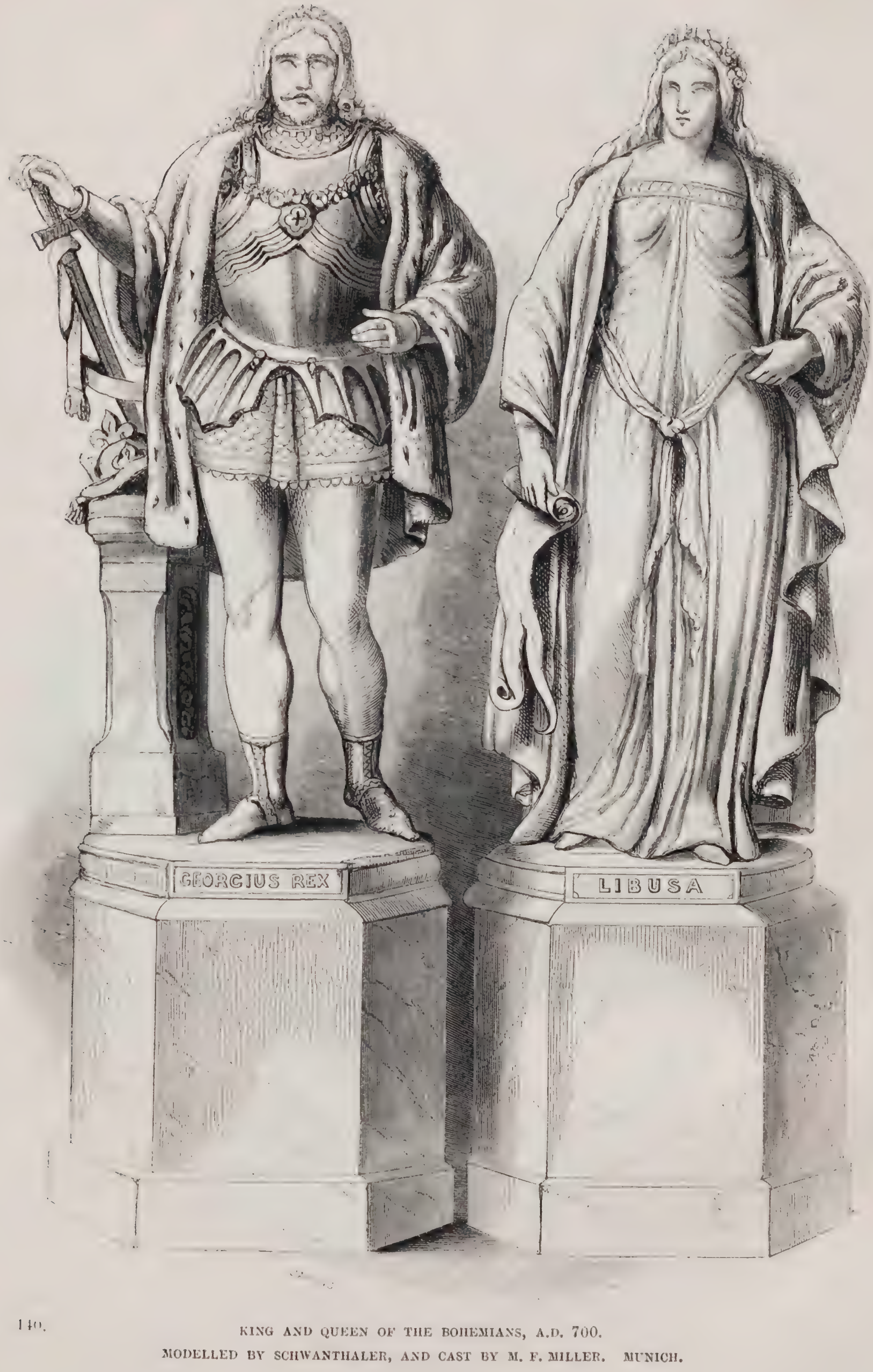
GOBLET IN PLASTER. CONRAD KNOLL. MUNICH.



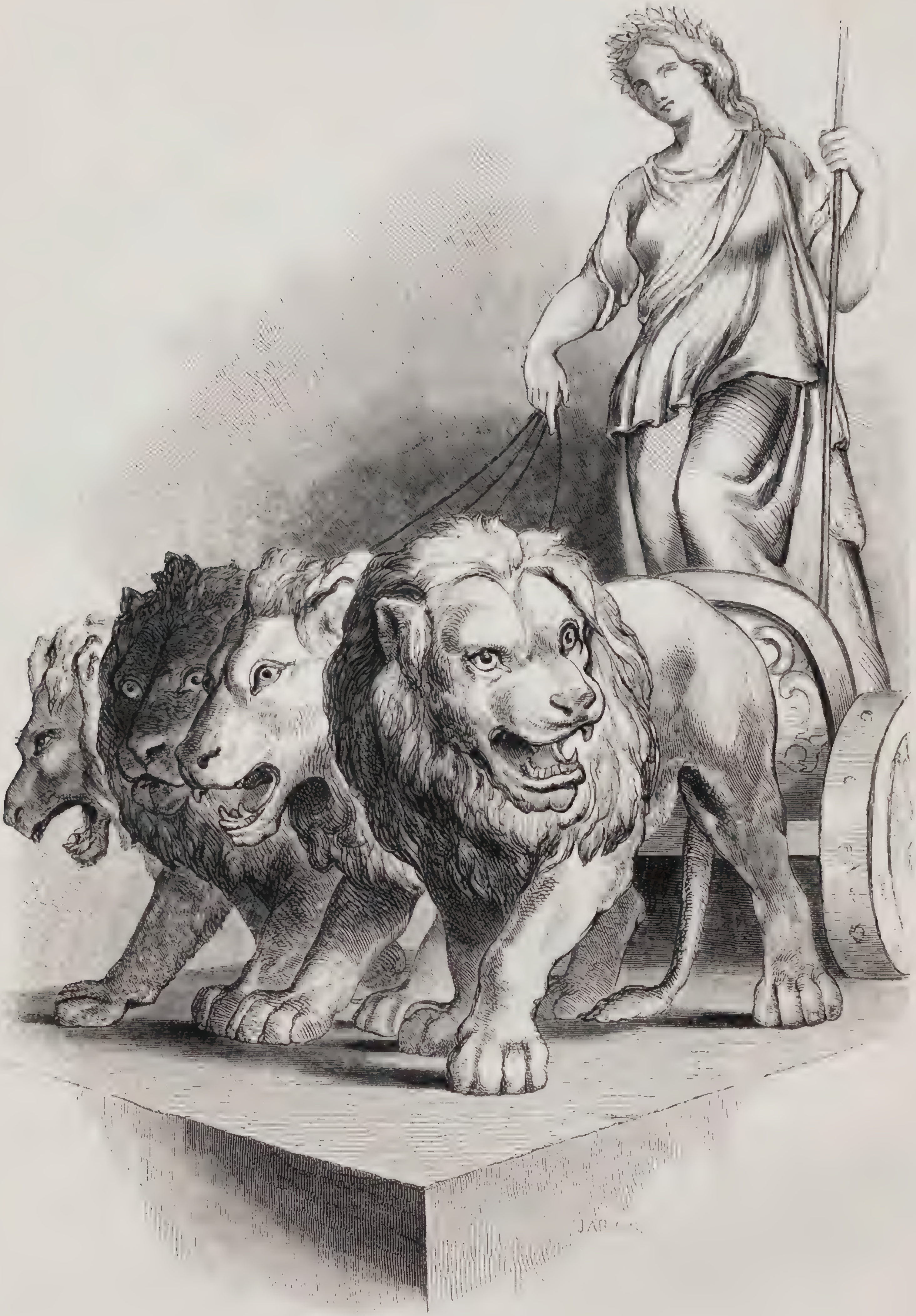
128.

A GOBLET OF IVORY, CARVED WITH BACCHANALIAN FIGURES AND ARABESQUES. M. HAGEN. MUNICH.

A PORCELAIN TANKARD, FROM THE ROYAL PORCELAIN MANUFACTORY, NYMPHENBURG, NEAR MUNICH, BAVARIA.



KING AND QUEEN OF THE BOHEMIANS, A.D. 700.
MODELLED BY SCHWANTHALER, AND CAST BY M. F. MILLER. MUNICH.



49.

COLOSSAL GROUP OF LIONS AT MUNICH.
(THE SINGLE LION IN THE EASTERN AVENUE FORMS ONE OF THIS GROUP.)

98 **Bischoff, C. A. & Co.** *Würzburg*—Manufacturer.
(Agent, J. Kendall, 8 Harp Lane, Great Tower Street).

Specimens of leather blotting books, cigar cases, porte-monnaies, pocket-books, &c.

99 **Wagner & Co.,** *Klingenberg-on-the-Maine*—Producers.

Samples of fire-clay.

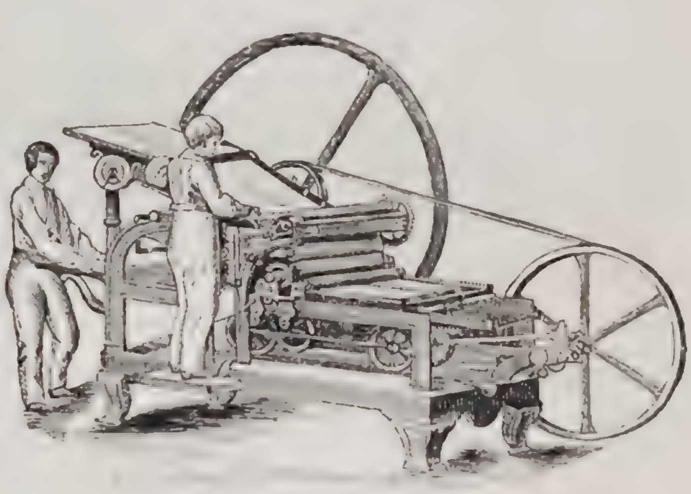
100 **Knocke, August,** *Munich*—Manufacturer.

Pair of kettledrums, with a peculiar and ingeniously constructed apparatus for tuning them with quickness and precision, and without noise.

102 **Reichenbach, C.,** *Augsburg*—Manufacturer.
(Agent, Mr. L. Bamberger, 20 King Street, Snowhill).

A printing machine of a new and simple construction. It may be worked by steam, water, or hand power. It is constructed to print from 1,200 to 1,400 sheets per hour (one person being sufficient to work it), and to combine the accuracy of a hand-press with all the advantages of a good printing machine. The novelty of the machine is in its construction, which renders it less liable to repairs than the common printing machines, and the inking apparatus, which can easily be adapted to the nature of the work to be printed. The perfect distribution of the ink is effected by means of seven rollers, without any inking-table before it reaches the form. The register of the sheets is equal to that of a hand-press, and is therefore adapted for the finest work. Wood-engravings, cards, and work of any kind may be printed on this machine with the same facility as book-work. They are perfectly noiseless, in consequence of the smooth working of the machinery, and do not occupy more room than a common hand-press.

The size of the table of this machine is from 21 to 27 inches; but larger machines are made on the same principle.



Reichenbach's Printing Machine.

SAXONY

Dr. Woldemar Seyffarth, LL.D., *Commissioner for Royal Saxony*, 91 *Piccadilly.*

A very complete collection of industrial products and of the materials constituting their basis is exhibited by this kingdom. Although the classified arrangement adopted in the United Kingdom has not been strictly observed in this case as in that of other foreign countries, still the arrangement of exhibitors in the Catalogue generally accords with the succession of the Thirty Classes, and consequently admits of ready comparison with other portions of this work. Among the raw materials are specimens of flax water-retted, and of yarn spun from it. The speciments of cobalt and nickel must attract the attention of all mineralogists and of others interested in the commercial and scientific application of these important metals. The former is principally used for the intense brilliancy of its oxide, the latter as a good substitute for colour, in combination with other metals. The cobalt colours are well shown in a series of specimens derived from the Royal Porcelain Works at Meissen. The nickel, cobalt ores, and colours are from one of the very few known sources of the former metal, the mine at Schneiberg. A few machines are exhibited—of these one is for planing type, one for boring, one for casting type, and one for sweeping narrow flues of chimneys. Among the philosophical instruments exhibited is an electro-magnetic telegraph similar to those employed on the telegraphic lines of Saxony and Bavaria: an electro-dynamometer, and specimens of watches made on the Swiss system, are also exhibited. The collection of musical instruments includes string and wind instruments of various kinds, harmonicas, pianofortes, &c. The textile manufactures are extremely well represented, especially in the woollen department, in which the long-established reputation of the Saxon manufacturers appears to be fully supported. This may be better conceived by the statement of the number of exhibitors of articles either entirely of woollen, or partially, as in worsted, their number is fifty-nine. The total number of Saxon exhibitors is only one hundred and eighty-eight: this proportion, therefore, of exhibitors of articles belonging to only one class, strongly indicates the prevailing direction in which the national industry of this kingdom exercises its activity. The producers of oil-cloth, and of that kind of it which is used for table-covers, are also numerous. A very valuable and extremely attractive collection of objects is that exhibited by the Royal Saxon Manufactory of China, the works of which have long been carried on on an extensive scale at Meissen. The vases, figures, and busts are delicately executed, and exhibit the excellent quality of this beautiful porcelain. An attractive object is a porcelain mirror frame painted in colours, with flowers in relievo. Specimens of types and typography are also exhibited. Among the sculptures are one or two figures in Carrara marble.—R. E.

1 Sommer, Charles, *Sornzig, near Mügeln*—Producer.

Specimens of flax cultivated in the Belgian manner, water-retted and swingled, also swingled and heckled. Patterns of extra fine yarn, spun from the flax. These, with the flaxes exhibited by Messrs. Watteyne and Gaetzschmann, are intended to show the progress made in the last five years in the culture of flax and its preparation in Saxony.

2 Watteyne, Joseph, *Lichtenberg, near Freiberg*—Manufacturer.

Patterns of swingled flax, cultivated in the Belgian manner, and water-retted.

3 Gaetzschmann, William, *Zittau*—Manufacturer.

Flax, watered and swingled, also partly heckled, in five different qualities.

4 Thieme-Widtmarkter & Pueschel, *Reudnitz, near Leipzig*—Manufacturers.

Bleached sponges, fine and common quality.

5 Kunze, Frederic, *Rochlitz*—Manufacturer.

Varnished leather. Black varnished calves' leather for the use of shoemakers and belt-makers; the same description, sheep's leather.

6 **Jordan & Timaeus**, *Dresden*—Manufacturers.

Assortment of dessert chocolates, consisting of figures, fruits, and numerous other objects, partly brown, partly coloured; ornaments for dining-tables, nips, Christmas presents, &c.

Chocolates and cocoa masses, in packets, as sold.

7 **Hardegen, Gustav**, *Leipzig*—Manufacturer.

Black printing-ink for hand presses, and for machines.

8 **Jagodzinsky, Anton**, *Leipzig*—Manufacturer.

Strong oil-varnish. Calcined soot. Printing-ink for machines and presses.

9 **The Royal Saxon Cobalt and Nickel Works**, *Schneeberg* (Agent, B. Biggs, 3 Lawrence Pountney Hill)—Producers.

A series of twenty-eight specimens of cobalt blue, enamel blue, smalt and cobalt green. Metallic bismuth. Metallic nickel in cubes.—This is stated to be the oldest establishment of the kind in the world.

[Nickel is now so largely employed in the manufacture of German silver, both in England and other countries, that its extraction from the ore has become an object of great commercial importance. This metal is not, however, abundant, and mines are in operation in only a few known localities where it has been found. It is generally associated, as in the specimens exhibited from Schneeberg, with cobalt. From other impurities it is separated by roasting, but from cobalt generally by a chemical process of solution and precipitation.—R. E.]

10 **The Royal Saxon China Manufactory**, *Meissen*—Producer.

Complete series of ultramarine blue.

11 **Schmidt & Co.**, *Daubnitz, near Lommartzsch*—Proprietors.

Safety-fusees:—No. 1, for common use in quarries, with black cover, 1000 yards in one piece. No. 2, for working in mines, with grey cover. No. 3, for working under the water.

Specimen of porcelain clay.

12 **Hoffmann, C.**, *Leipzig*—Manufacturer.

Machine for planing printing types; with three different planing tools, much used by type-founders and printers in Germany.

Machine for drilling corals.

13 **Brockhaus, F. A.**, *Leipzig*—Proprietor.

Machine for founding types, with instruments for two different sizes of letters.

14 **Rieckborn, H.** *Leipzig*—Inventor.

Machine for sweeping narrow chimneys.

[This apparatus, consisting of a common sweeping instrument and a scratching instrument for the harder soot, is let down by a cord from the top of the chimney. The scratching instrument, which can be separately used, is also provided with springs, in order to make it fit for chimneys that are from 7 to 10 inches wide.]

15 **Stoehrer, Emil**, *Leipzig* — Inventor and Manufacturer.

Electro-magnetic telegraphic apparatus, with dial and hand; used on the telegraphic lines in Saxony and Bavaria.

[The machine is put in motion by the current of a rotary electro-magnetic machine of the exhibitor's construction. In the present size of the machine the stream is strong enough to give signs for a distance of 100 miles. The work is moved only by the electric current and the change of its direction. The dial, which serves for giving and receiving communications, has 36 fields. The indications are given by moving the arm the nearest way, forward or backward, to the intended field. The hand, which notes the signs, turns always to the right. At the ordinary speed of the machine eight engines can be given every second.]

16 **Leyser, —**, *Leipzig*—Manufacturer.

Electrodynamometer, with mirror and telescope. For measuring the intensity of the galvanic current.

17 **Lange, Adolph**, *Glashütte*—Manufacturers.

Watches, manufactured as in Switzerland, by division of labour. A box with a systematic arrangement of all parts of a watch, and a series of watch movements in four different stages of manufacture. Watch cases and engraved patterns. Ten watches, anchor escapements, chronometer balance. Three, with eight stones. Two of them in gold, eight in silver cases, one with an arrangement for winding-up the spring and regulating the hands, without opening the case.

18 **Klemm, George & August**, *Markneukirchen* (Agents, I. D. Kohler and Son)—Manufacturers.

Stringed instruments. Bresciano counter bass and violoncello. Violin. (Paola Albani.) Amati, Stainer, and cord rim violins. Violin in the antique style. Bass viol. Guitar. Violin bow, with silver ornaments. Pattern book of all the appendages of the violin.

Wind instruments. Chromatic horn, in F; ditto trumpet, in G, after the newest style.

[The manufacture of musical instruments for sale occupies many thousands of hands in the Upper Voigtland, and is remarkable, not only for the cheapness of its productions, but also for the excellence of the wind instruments. Jacob Stainer, whose violins rivalled those of Cremona, lived at Innspruck in the Tyrol, 1647. His signature was "Jacobus Stainer. In absam prope Oenipontem 1647." Bresciano was a noted bass maker. —H. E. D.]

19 **Herold, C. G.**, *Klingenthal*—Manufacturer.

Wind instruments. Tenor-tube, with three conic valves. Brass reed horn, with eight valves. Brass clarionet, in E, with sixteen keys. Ivory piccolo, in D with ten keys. Mouth-harmonica.

Combs of wood; two pierced and two figured. The manufacture of wood combs in Saxony is extensive, and is usually combined with that of musical instruments.

20 **Glier, Ferdinand, & Son**, *Klingenthal* (Agent, Frederick E. D. Hast, 18 Aldermanbury)—Manufacturers.

Wooden combs and a book of patterns. Violins, for exportation. Specimens of fiddlesticks. Guitar. Trumpet of German silver. Cornet of copper, in a case. Cornopean of brass in a case.

21 **Glier, Gottlieb**, *Markneukirchen*—Manufacturer.

Wind instruments. Sax horns. Bugle of copper, with eight keys of argentan. Bugle of brass, with the same. D flute of ebony, with keys.

22 **Schuster, Ludwig**, *Markneukirchen*—Manufacturer.

Musical instruments:—Sackbut in B, of gilt brass, with three cylinders; trumpet in G, of German silver; cornet B alto, of gilt brass.

23 **Schuster, M.**, jun., *Markneukirchen* (Agent, Charles Holland, 41 Finsbury Circus) — Manufacturer.

Wind instruments:—Clarionets in B and D, in German silver, with all the keys; B cornet, with three cylinders; bass clarionet, with all the keys.

24 **Zimmermann, Charles**, *Carlsfeld, near Eibenstock*—Manufacturer.

Harmonicas and accordions:—Chromatic concert harmonicas; bass and tenor harmonicas; accordions of forty and twenty notes.

25 **Breitkopf & Haertel**, *Leipzig*—Manufacturers.

Concert grand piano in a rosewood-case.

26 The **Royal Direction** of **Railways**, *Dresden.*

Models of the two great viaducts of the Saxo-Bavarian Railway, over the Elster and Göltzsch valleys.

27 **Lattermann, H. L. & Sons**, *Morgenröthe, near Auerbach*—Manufacturers.

Tin goods. Pots and pans (culinary utensils) used in Bavaria. Machines for making coffee. Iron spoons.

28 **Rechsteiner, John Barsh**, *Connewitz, near Leipzig*—Inventor.

Twenty-eight specimens of wood-screws.

29 **Wolf, J. H.**, *Burgstädt, near Chemnitz*—Manufacturer.

Iron wares. An assortment of nails, rivets, and tacks.

30 **Krumbholz & Trinks**, *Neustadt, near Stolpen*—Manufacturers.

Steel wares. Various pocket-knives, with from one to thirty-two blades, and with ornamented handles; knives for cutting the end of cigars; champagne knives; table knives, &c. Hangers and daggers, with figured handles. Exhibited for execution and arrangement.

31 **Levy, Hermann**, *Dresden*—Manufacturer.

Carving knife and fork; with handles of solid mother-of-pearl, and pins of silver.

32 **Thuerigen, F. T.**, *Meissen*—Manufacturer.

A gun with a double barrel, on a new percussion principle.

33 **Strube, Theodor, & Son**, *Leipzig* (Agent, Phillips Brothers, 31 Cockspur Street)—Manufacturers.

Plate, or silver works. A vase with fifteen silver flowers, weight 93½ ounces.

34 **Jahn, August**, *Dresden*—Manufacturer.

Eight sets of chess figures of metallic composition, with four chess-boards.

35 **Buenau, Rudolph**, *Reudnitz, near Leipzig* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturer.

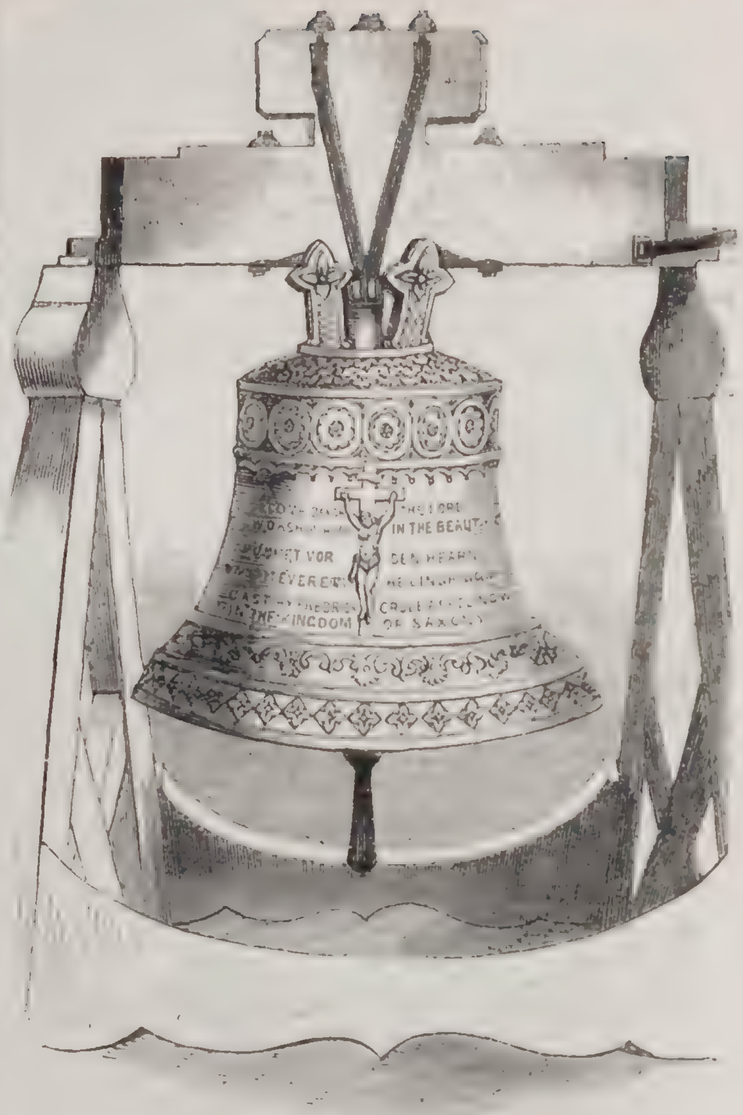
Composition goods:—Playthings for children. Sets of coffee and tea things, &c. Toilets, caskets, cigar-boxes, &c.

36 **Hoffmann, Frederic**, *Sebnitz*—Manufacturer.

Parts of lamps for the trade, made of brass. Lamp-burners in different numbers. Regulating jacks. Tubes with screw thread.

37 **Gruhl, Frederic**, *Kleinwelka, near Bautzen* (Agent, Mr. Mallalieu, 97 Hatton Garden, Holborn)—Manufacturer.

A bell of bronze, with iron clapper and tackle. The following cut represents this bell.



Gruhl's Bronze Bell.

[This bell weighs 750 lbs. On the front side is a crucifix raised from the bell. On the bell are the inscriptions in English and German: "Come before the Lord, and worship him in the beauty of holiness." The reverse of the bell shows in-bas relief a head of Christ, after the model of the medallion cut by Mr. Hofgürtler Seifferth, of Dresden, and bears on each side the following appropriate inscriptions:—"Serve the Lord with gladness."—"Come before his presence with singing."

The ornaments are designed by Mr. Schramm, of Zittau, and modelled by the sculptor Schulze, of Bautzen.]

38 **Strauss, E. W.**, *Chemnitz*—Manufacturer.

Cotton yarn of different numbers.

39 **Heymann, G. F.**, *Chemnitz*—Manufacturer.

Cotton yarn of different numbers and qualities.

40 **Bodemer, George**, *Zschopau*—Manufacturer.

Cotton yarn for stockings.

41 **Hoeffer, C. F.**, *Tannenberg, near Annaberg*—Manufacturer.

Specimens of twist, Nos. 30, 40, 50, spun from Georgia.

42 **Pansa & Hauschild**, *Chemnitz*—Manufacturers.

Knitting and sewing cotton yarn of various numbers and qualities.

43 **Mattoch, C. G.**, *Chemnitz*—Manufacturer.

Cotton thread of different qualities and numbers.

44 The **Society** of **Worsted Spinners**, *Leipzig*—Manufacturers.

Tableau, showing the process of worsted spinning, from the raw wool up to the finest yarn.

Specimens of worsted yarns of different numbers.

45 **Trinius & Sons**, *Leipzig*—Manufacturers.

A collection of worsted yarns, raw and coloured, various threads. Dyed by Bergmann and Co., Berlin.

46 Petzoldt & Ehret, *Reichenbach*—Manufacturers.
Worsted yarns, of different numbers.

47 Solbrig, C. F., *Chemnitz*—Manufacturer.
Worsted and woollen yarn, of different numbers.

48 Wolff, W. H., *Burgstädt, near Chemnitz*—Manufacturer.
Woollen soft worsted yarn (raw), various Nos., each 5 lbs. weight; ½ lbs. Nos. 24 and 26 on the reel.

49 Schmidt, J. G., jun., & Sons, *Altenburg and Penig*—Manufacturers.
Woollen yarn, in different colours, and a book of shades.

[The number of wool-spinning factories at present in operation in Saxony has been estimated at about 120. Of this number 40 are concerned in spinning worsted yarn, and employ in this manufacture about 54,000 spindles; and 180 spin woollen yarns with a power of about 80,000 spindles. The excellence of the Saxon cloth productions is familiarly known.—R.E.]

50 Behr & Schubert, *Frankenberg*—Manufacturers.
Rich silk stuffs for tapestry, furniture, carriages, &c. Satin, damask, brocatelle, and coteline. Portrait woven in silk. A flag of double satin, with fringes, &c.

50a Roehling & Co., *Annaberg, Saxony*—Manufacturers.
Rich silk stuffs, viz.:—Lampas. Damas lizeré. Broderie Pompadour moiré à reserve. Façonné lancé découpé. Façonné glacé. Armure.

51 Beyer's Widow & Co., *Zittau* (Agents, John Wilson & Sons, 159 New Bond Street)—Manufacturers.
Linen damask table cloths; tray cloths; with napkins and doyleys—raw, white, and bleached.

[The manufacture of linen damasks, one of the oldest departments of Saxon industry, is situated in that part of the kingdom called Upper Lusace (Oberlausitz), the centre of which is the town of Zittau. The weavers reside principally in the villages of Schönau and Waltersdorf, and in the neighbourhood; Gross-Schönau is, indeed, the cradle of this industry. The merchant-manufacturers trading in this article reside partly in Gross-Schönau, partly in Zittau; there are also a few firms at Dresden and Leipzig.]

52 Lieske & Haebler, *Gross-Schönau, near Zittau* (Agent, Philip Amsel, 20 Providence Row, Finsbury Square)—Manufacturers.
Linen (damasks), raw and bleached. Table tea-cloths, and napkins of different prices, sizes, and qualities.

53 Waentig, Chr. David, & Sons, *Gross-Schönau, near Zittau* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturers.
Manufactures in linen damask—viz.: A large table-cloth, unbleached. Napkins; all linen, unbleached and white; half-silk, crimson, and chamois; half linen, red and white.
Series of table-cloths, with napkins, of pure linen-bleached damask; including pieces executed in the years 1770, 1775, 1800, 1805, 1810, 1818, 1835, 1844, and 1850, to show the historical progress of the art.
Half-silk and silk damask napkins, partly with fringes.

54 Proelss, sen., & Sons, *Dresden*—Manufacturers.
Table-cloths of raw and white linen damask. Napkins of raw and white linen damask, with armorial bearings. Damask doyleys.

55 Brandstetter, F., *Leipzig*—Manufacturer.
Table-cloth of linen diaper, 24 feet long, 8 feet wide. Napkins.

56 Boehler, F. L., & Son, *Plauen*—Manufacturers.
White cotton fabrics and embroideries:—Plain mull, figured cambric, plain and figured curtain-gauze.
Curtains in figured mull, figured nansoc stripes, embroidered jaconet stripes.
Fine embroidered handkerchiefs of linen.

57 Heynig, J. G., & Co., *Plauen*—Manufacturers.
Cotton goods for curtains:—Gauze with borders, figured. Gauze, with borders à jour. Figured damask. Plain mull. Cambric. Jaconet.

[This very important branch of Saxon industry, the cotton manufacture, has its seat in that part of the kingdom called the Voigtland; the centre of it is Plauen, where, and in some little neighbouring towns, the merchant-manufacturers reside. All the goods are woven by hand-weavers on Jacquard and embroidering looms, in their own houses; many thousands of them are at work in the towns and villages of the country. The patterns for the figured goods are procured by the merchant-manufacturers. The goods embroidered by hand are chiefly worked by girls. The bleaching, dressing, and finishing of the goods are done in the establishments of the manufacturers, or in establishments erected for that purpose.]

58 Krause, C. G., & Co., *Plauen*—Manufacturers.
Embroideries;—Figured jaconet; embroidered mulls; figured and coloured garnitures.

59 Mammen, F. A., & Co., *Plauen*—Manufacturers.
Embroideries in mull, half cambric, jaconet, and linen cambric. Capes and handkerchiefs, tamboured, embroidered with the needle and with the loom.

60 Schmidt, G. F., & Co., *Plauen* (Agents, Ullmann, Hirschhorn, & Co.)—Manufacturers.
Embroideries on jaconet, silk and cambric, done with cotton and silk. A set of furniture; easy chair, pillow and cushions embroidered à la Francaise; footstool; window curtains with fringes; wall basket; table cover; shades; letter case; pincushion, embroidered in the French style.

61 Meinhold & Stoffregen, *Plauen*—Manufacturers.
Embroideries:—Muslin curtains, rose and white (broché brodé), new patterns worked with the Jacquard loom; gauze curtains, white (broché), worked with the Jacquard loom; embroidered (with the needle) linen handkerchiefs; mulls, plain and figured.

62 Schnorr & Steinhauser, *Plauen*—Manufacturers.
Embroideries in mull, French, and Scotch cambric and net. Pair of sleeves of mull in the pagoda fashion; embroidered collars; cambric collars à l'Anglaise; guipures of net work; chemisettes of mull, à la Duchesse, à la Marie, à l'amazone; cambric pocket handkerchiefs, English embroidery; pocket handkerchief of French cambric; morning dress of Scotch cambric; robes of mull; pillow of French cambric.

63 Glaeser, Ferdinand, *Lengenfeld, near Auerbach*—Manufacturer.
Cambrics, jaconets, and jaconets spotted, of different qualities. Exhibited for cheapness, and for the quantity in which they are manufactured.

64 Hetzer, Ernst, & Son, *Auerbach*—Manufacturers.
Fine white fancy cotton goods:—Gauze ramage for curtains, jaconet, batist, and organdy.

65 Beck, G. F., *Hohenstein*—Manufacturer.

Cotton woven goods (piquè):—Coverlets, figured; red, plain, and rough. Piquè petticoats.

66 Stoelzel, G. F., & Son, *Eibenstock*—Manufacturers.

Embroideries in mull jaconet, linen cambric, and cotton gauze. Capes: festooned of jaconet, mull and cambric, guiped of cotton gauze, of net work, black and white chemisettes. Bonnets, of thread; of white net work; white, black, and coloured with rosettes and fringes, with gold; double black with barbe, of net work. Visites, pelerines, mantillas, and shawls, various. Laces: Brussels and coloured woollen.

67 Priem, Emily, *Eibenstock*, Manufacturers. (Agent, A. Heintzmann, 17 Ironmonger Lane, Cheapside.)

Laces:—Bone laces; complete gown, volant. Embroidered; veil, corset, Bertha of crape, fancheon of black net work, mixed with yellow; fancheon of white net work.

68 Foerster, F., *Eibenstock* (Agent, H. Kohnstamm, 7 Union Court, Broad Street—Manufacturer.

Embroidered capes, ruffles, bonnets, barbes, veils, shawls, and pelerines.

Chemisettes; embroidered handkerchiefs; Brussels and zephyr ladies' jackets; white blonde-lace barbe, &c.

Laces:—Zephyr bed laces, black bobbin, black silk laces, genuine blondes, and a long black barbe.

[This branch of industry occupies more than 20,000 hands in the mountainous parts of Saxony, called the Erzgebirge. All the articles are made by hand.]

69 Doerffel, C. G., & Sons, *Eibenstock* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturers.

Laces:—White thread; black silk lace insertion; and black silk laces.

70 Koester & Uhlmann, *Schneeberg* (Agent, E. & H. Blank, 10 Trump Street, King Street, Cheapside)—Manufacturers.

Laces:—Imitation, Valenciennes, and Brussels.

Embroideries:—Capes; Valenciennes; zephyr net work; ruffles; handkerchiefs of cambric; black silk half veils; Berthas and barbes; mantillas; and shawl of zephyr net work, &c.

71 Schreiber, F. A., *Dresden*—Manufacturer.

Laces and embroideries, imitation Brussels. Volants; bertha; barbe; echarpe. Embroidered scarf, in the ancient style; barbe, Bertha, &c. Embroideries: collars, ruffles, pocket handkerchiefs, &c.

72-83 The United Merchant Manufacturers: Friedrich & Son, Nacke & Gehrenbeck, Neuber, Friedrich, Solbrig, Franc, Wex & Lindner, all in *Chemnitz;* Glaeser, J. S., jun., in *Schoenau, near Chemnitz;* Haertel, H. C., in *Waldenburgh;* Pester, August, in *Limbach;* Meinert Brothers, in *Oelsnitz;* Landgraff Gottfried, *Hohenstein;* Webendoerffer, H., & Sons, in *Lichtenstein;* Sedlag, Gustav, in *Koenigsbruick*, Producers. (Agents for Nacke & Gehrenbeck and Friedrich & Son, W. Meyerstein, 15 Watling Street. Agent for Wex & Lindner, A. Heintzmann, 17 Ironmonger Lane, Cheapside. For H. C. Haertel and G. Landgraff, D. Joshua, 34 King Street, Cheapside).

Men's and women's hose; half hose; men's and women's gloves; children's and boys' hose; half hose and jackets; gloves; drawers; and caps; woollen and cotton camisols; amazons, &c., brown, white and coloured. Women's hose: brown lace, white lace, and silk embroidered, &c.

[The articles here exhibited represent systematically one of the most important branches of Saxon industry. The manufacture of hosiery goods, principally in cotton, but also in wool, linen, and flax, employs more than 30,000 looms, almost all of them being centralised near the towns of Chemnitz, Penig, Waldenburg, Hohenstein, and Lichtenstein, where all little places and villages abound with stocking-weavers. The total number of hands amounts to 45,000. The merchant-manufacturers that collect the products for sale (generally through the medium of factors) reside, most of them, at Chemnitz, Limbach, Hohenstein, Lichtenstein, Oelsnitz, and Waldenburg.]

84 Becker & Schraps, *Chemnitz*—Spinners and Printers.

Printed calicoes, fast colours. Ribbed cotton cloth, printed with eight steam colours. Cotton handkerchiefs, madder work. Cotton cravats and neckerchiefs, of various styles.

85 Lohse, Edward, *Chemnitz* (Agent, W. Meyerstein, 15 Watling Street)—Manufacturer.

Damasks for furnitures in half silk, all silk, half wool, and cotton, named Valentia, imperial, gobelin, berakan, president, rips, &c.; foulard lustring, half silk; plain and figured cotton cameleons; figured ginghams; table-covers and bed-cover of half silk, half wool, and cotton damask.

Glazed gingham; cravats, cotton jaconet; atlas, and half silk satin.

[The manufacture of cotton, wool, and silk-mixed damasks, and similar stuffs, occupies in Chemnitz and the neighbourhood above 2000 Jacquard looms, only a few of which are in factories, most of them belonging to hand-weavers working at home. To provide them with patterns and the material, as well as the finishing and dressing of the goods, is the business of the merchant-manufacturers residing at Chemnitz. This branch of the Saxon industry has made great progress during the last ten years.]

86 Hoesel, Robert, & Co., *Chemnitz*—Merchants.

Damasks:—Woollen purple, green, crimson. Silk and wool, two and three coloured brown, striped gobelins, and two-coloured green. Cotton and woollen, scarlet, light-blue, brown, green, crimson, royal blue, nacarathe, &c. Table-covers.

87 Roehrig & Albrecht, *Chemnitz* (Agent, W. Meyerstein, 15 Watling Street) — Manufacturers.

Damasks:—Cotton, cotton and wool, cotton, wool, and silk, wool and silk, in various colours.

88 Seyffert & Breyer, *Chemnitz* (Agents, Gottschalk & Schroeder, 72 Basinghall Street)—Manufacturers.

Damask in different colours, named Victoria gobelin, coloured gobelin, coloured imperial; silk-striped; woollen and cotton, woollen, silk, and cotton. Table-cover, named gobelin tapis.

89 Vogel, William, *Chemnitz* (Agent, D. Joshua, 34 King Street, Cheapside)—Manufacturer.

Stuffs:—Woollen, cotton, and silk mixed. Fancy articles, named satin laine, satin laine rayé soie, satin cotton, &c.; damas mi soie velouté, royal mi soie, royal coloured, woollen and silk mixed; woollen, silk, and cotton; woollen and cotton.

[The manufacture of worsted and mixed goods is concentrated, with few exceptions, in the towns of Glauchau and Meerane, and the neighbourhood. The goods are woven by hand-weavers in their own houses, and the business is carried on by the manufacturers, as is the case with the other branches of Saxon textile production. The number of looms engaged in that department of industry amounts to 10,000 and more.]

90 Thuemer & Toepffer, *Chemnitz* (Agents, Gebhardt, Rottman, & Co., 83 Hatton Garden)—Manufacturers.

Damasks:—Silk, cotton, and wool imperial; cotton imperial; furniture in cotton and wool. Table-covers—patent, cotton, and cotton and wool. Fancy stuffs—robes, satin laine façonné.

91 Winkler & Son, *Rochlitz*—Manufacturers.

Worsted stuffs from soft worsted yarn:—Satin double; maroquin laine; cuir de laine; popeline laine; velours laine; velours rayé; Cashemir, electa.

This exhibitor is the chief representative of the production of the finest goods from soft worsted yarn in Saxony. The articles are all woven by hand weavers in their houses.

92 Ziegler & Haussmann, *Glauchau* (Agent, J. Burroughs, 18 Addle Street)—Manufacturers.

Woollen stuffs (made from soft worsted yarn, mixed with silk); fancy articles named poult de soie, Amienne, Cashmir, Thibet, satin imperial, satin de Saxe, cassimer tissu, &c.

This and the next eight exhibitors represent an important branch of the industry of Saxony, employing a large number of hand-looms in Glauchau and the neighbourhood.

93 Koehler & Schedlich, *Glauchau* (Agent, Edward Buchler)—Manufacturers.

Stuffs, fancies, wool, cotton and silk mixed, named Ecossais, Islyennes, Stradellas, Amiennes, Veloutés, Favoritas, printed Veloutés, &c.

94 Guenther & Simon, *Glauchau*—Manufacturers.

Worsted stuffs—Valentia, Estella, Cachemirienne, and Armure.

95 Facilides & Co., *Glauchau* (Agent, W. Meyerstein, 15 Watling Street)—Manufacturers.

Shawls—long, mosaique, teutonia, zephyr, Cashmere, Nancy, &c.

96 Hecker & Tasch, *Glauchau* (Agents, Cooper & Blagg, 44 Friday Street, Cheapside)—Manufacturers.

Various fancy stuffs, woollen and cotton, named Lombard, Montpensier, Cashmeres, tartan, and trisana; and woollen, named pure laine, first and second quality, sprinkled; cameleon, woollen.

97 Schiffner & Zimmermann, *Glauchau*—Manufacturers.

Worsted stuffs:—Stalimene; Melpomene, all wool; Melpomene, half silk; Aqueline; Castiglione; Montauban; Stalimene, half silk.

98 Trinks, Edward, *Glauchau*—Manufacturer.

Stuffs; wool, and wool and cotton mixed. Robes, Florida, and façonnée. Llama, for ladies' cloaks. Robes popeline; façonnée; and striped; Imitée.

99 Stauss & Leuschner, *Glauchau* (Agents, H. Oppenheim & Co., 15 Addle Street)—Manufacturers.

Fine worsted goods. All worsted, gros, mixed, Montpensier, thread warp, worsted weft. Llama, made with thread warp and woollen weft, and with silk warp and worsted weft.

100 The Weavers' School, *Glauchau.*

Stuffs; wool, and wool and cotton; robe faquard; châles, or shawls, woollen and silk.

Specimens worked by the scholars of this institution, which is supported by the manufacturers of Glauchau.

101 Gruener, F. W., *Glauchau*—Producer.

Woollen stuffs (worsted soft yarns)—Thibets, superfine quality, different colours. Dyed by the exhibitor.

102 Graefe, J. F., & Son, *Meerana*—Manufacturers.

Woollen and half-woollen fancy stuffs—Montpensier, Cachemiriennes. Plaids, first and second quality. Châles, damasés.

[These and other articles exhibited represent a branch of industry rivalling those of Glauchau, and remarkable for the immense quantity of its productions and the cheapness of the articles.]

103 Dietrich & Straff, *Meerana*—Manufacturers.

Worsted woollen fancy stuffs; and mixed tartan, Cachemirienne, Montpensier, Odéon checks, and satiné.

104 Richter, Henry Ludw., *Meerana*—(Agent, A. Heitzmann, 17 Ironmonger Lane, Cheapside)—Manufacturer.

Half woollen stuffs—Angora, mixed with silk. Montpensier. Napolitaine, first and second quality. Muslin d'Ecosse.

105 Glafey & Neubarth, *Reichenbach*—Manufacturers.

Woollen stuffs and printed covers. Table-covers of cloth and Circassienne, and printed flannel. Atlas. Superfine woollen atlas, made from soft worsted yarn, by Petzolt and Ehret.

[This and the next exhibitor represent a branch of Saxon industry peculiar to Reichenbach and its neighbourhood, producing good and cheap articles for use.]

106 Seyferth, John, & Co., *Reichenbach*—Manufacturers.

Woollen fancy stuffs and printed shawls. Cashmere. Llama. Victoria shawls, printed in different colours and patterns.

107 Lehmann, C. G., *Boehrigen, near Rosswein* (Agents, Gottschalk & Schroeder, 72 Basinghall Street)—Manufacturer.

Woollen and mixed stuffs:—Llama-flannels of different colours, and plaid patterns for mantles; buckskin, entirely woollen; molleton, pepper and salt; swan-skin for shirts and chemisettes, with cotton-warp; baize, with cotton-warp, for petticoats, striped, quarried and striped with borders.

108 Boettiger, H. G. F., *Crimmitzschau*—Manufacturer.

Woollen stuffs, viz., cassinet, green, blue, brown, black, and mixed. Tricot cora. Double cassinet black; and mixed. Cashmere.

[The manufacture of cassinets, elastics, satins, buckskins, and similar articles, forming the transition to the clothing manufacture, is almost concentrated in Crimmitzschau. The goods, with few exceptions, are done by hand-weavers. The spinning, dressing, and finishing machines, sometimes also the dyeing-houses, are in the establishments of the manufacturers.]

109 Burkhart, H. Th., *Crimmitzschau*—Manufacturer.

Woollen stuffs. Winter and summer elastics, and cassinet mixed.

110 Collel, Frederic, *Crimmitzschau*—Manufacturer.

Woollen stuffs—cassinet, summer satin, and winter buckskin.

111 Hueffer, H., *Crimmitzschau*—Manufacturer.

Woollen fancy stuffs, for paletots and trousers. Buckskin, of various qualities, for summer and winter. Grey and green cassinets.

112 Helling, O., & Co., *Crimmitzschau* (Agents, Barthelmes and Buckup, 28 Swan Chambers, Gresham Street)—Manufacturers.

Woollen stuffs—Summer and winter elastics.

113 Kirsten, C. W., *Crimmitzschau*—Manufacturer.
Woollen stuffs; cassinet, and summer buckskin.

114 Kauffmann, C. H., & Son, *Crimmitzschau*—Manufacturers.
Woollen stuffs. Zephyr, deep scarlet; Peruvienne; paletot; winter and summer elastics: summer-satin, and cassinet.

115 Mueller & Co., *Crimmitzschau*—Manufacturers.
Woollen stuffs; summer and winter buckskin.

116 Oehler Brothers, *Crimmitzschau*—Manufacturers.
Woollen stuffs. Cassinet of different colours; black doeskin; satinet, drab-colour; glacé.

117 Spengler, Charles, *Crimmitzschau*—Manufacturer.
Woollen stuffs. Winter buckskin.

118 Matthess, C., jun., *Zschopau, near Chemnitz*—Manufacturer.
Cassinet, woven on power-looms.

[The manufacture of damask and figured woven goods, mixed of cotton, wool, and silk, occupies many thousand hands and Jacquard looms in Chemnitz and its neighbourhood.]

119 Zschille, F., & Co., *Grossenhain* (Agents in London, Barthelmes & Buckup, 28 Swan Chambers, Gresham Street)—Manufacturers.
Buckskin, of various patterns. Satin, black and light blue. Doeskin, &c.

120 Schrœer, F. W., *Oschatz* (Agents in London, Barthelmes & Buckup, 28 Swan Chambers, Gresham Street)—Manufacturer.
Satin, bronze and green; cassimere, bronze and olive; Duffel cloth, black; black satin.
The pieces, No. 1267, 1250, and B 99, are made by C. F. Kunze, Oschatz.

120a Kunze, G. F., *Oschatz*—Manufacturer.
Specimens of bronze and green satin, and black duffell-cloth.

121 Bernhard, Will., *Leisnig*—Manufacturer.
Woollen stuffs, buckskin for paletots and great-coats, calmucs, great-coats, &c.

122 Herrmann, F. G., & Son, *Bischofswerda*—Manufacturers.
Coloured cloths of finest quality. Black cloth of fine quality.

[The following exhibitors are placed according to the fineness of their goods. The clothing manufacture of Saxony, employing more than 8,000 men and 4,000 looms, has its seat in a number of little towns, where the weavers are associated in companies or guilds. The spinning, dressing, shearing, fulling, and finishing machines are sometimes collected in the establishments of single manufacturers; but not unfrequently the companies keep their own fulling machines. The dressing and finishing is in some cases in the hands of a distinct guild of cloth-dressers and finishers. For the last ten years this branch has made essential progress. The principal centres of trade are Bischofswerda, Camenz, Grossenhain, Oschatz, Leisnig, Dobeln, Rosswein, Werdau, Kirchberg, Lengenfeld. Each of these towns produces certain classes of clothes, and the order of towns and exhibitors in the catalogue descends from the finer sorts to the coarest and cheapest.]

123 Koblick, H. M., *Bischofswerda*—Manufacturer.
Cloths of thin quality; olive, bronze, and invisible.

124 Grossmann, Chr. G., *Bischofswerda*—Manufacturer.
Superfine cloth—black, clare bronze, olive, dark bronze, dark green, clare green, and blue.

125 Grossmann Brothers, *Bischofswerda, Dresden*, and *New York*—Manufacturers.
Cloth for the United States market, in eleven different qualities and colours, woven by E. E. Bernhardt, at Leisnig, dressed and made up by the exhibitors.

126 Meissner, T. F., *Bischofswerda*—Manufacturer.
Specimens of cloths of a fine black.

127 Moerbitz, C. G. E., *Bautzen*—Manufacturer.
Cloths, coloured and unfinished.
A tableau showing the whole process of cloth-manufacture, from the raw wool to the finished cloth.

128 Fiedler, Adolph D. Gottlob, *Oederan* (Agent in London, Charles Holland, 41 Finsbury Circus)—Manufacturer.
Fine black cloth, and light cloth for summer coats.

129 Meissner, F. T., *Grossenhain*—Manufacturer.
Cloths thin black; coloured, olive and blue; thick, black and bronze.

130 Meissner, F. A., *Grossenhain* (Agents in London, Barthelmes & Buckup, 28 Swan Chambers, Gresham Street)—Manufacturer.
Cloth, black, brown, and green; best and middling qualities.

131 Junghans, J. G., *Grossenhain*—Manufacturer.
Cloths, black and coloured, of different prices.

132 Caspari, J. F., *Grossenhain* (Agents in London, Barthelmes & Buckup, 28 Swan Chambers, Gresham Street)—Manufacturers.
Cloth—black, blue-green, wool-black, and bronze.

133 Buchwald, Reinhard, *Grossenhain*—Manufacturer.
Black and brown cloth, of middle quality.

134 Jaehnig, W., *Grossenhain*—Manufacturer.
Cloths, black, brown, and blue.

135 Presspreich, Ernst, & Son, *Grossenhain*—Manufacturers.
Various cloths. Thick and thin black.

136 Meissner, E., *Grossenhain*—Manufacturer.
Cloth, pensée and blue.

137 Meissner, M., *Grossenhain* (Agents in London, Barthelmes & Buckup, 28 Swan Chambers, Gresham Street)—Manufacturer.
Cloth, green and olive.

138 Zschille Brothers, *Grossenhain* (Agents in London, Barthelmes & Buckup, 28 Swan Chambers, Gresham Street)—Manufacturers.
Cloth, first quality, blue and black; second, green and black; thin cloth, for the United States market, black and coloured.

139 Herrmann, W., *Leisnig*—Manufacturer.
Cloths, of different qualities.

140 Reichel, Christ. Fred., *Rosswein*—Manufacturer.
Coloured cloths. Dahlia, pensée, green, olive, bronze, scarlet, mineral blue, and black.

141 PETZOLDT, FERD., *Lengefeld* (Agents, Barthelmes and Buckup, 28 Swan Chambers)—Manufacturer.

Black cloth.

142 WOLF, C. A., *Kirchberg, near Zwickau*—Manufacturer.

Cloth of different qualities and prices, crimson, scarlet, blue, and black.

143 WOLF, J. G., sen., *Kirchberg*—Manufacturer.

Cloths, black, scarlet, crimson, various qualities.

144 WOLF, FERD., *Kirchberg*—Manufacturer.

Woollen cloth, crimson, Turkey red or deep scarlet, and chemical blue.

145 SINGER, C. F., *Kirchberg*—Manufacturer.

Cloths. Scarlet, black, mixed, indigo blue, dark green, kali blue.

146 UNGER, C. G., *Kirchberg*—Manufacturer.

Cloths, of common quality, different colours.

147 KRAUSE, F. W., *Grossenhain* (Agents, Barthelmes and Buckup, 28 Swan Chambers)—Manufacturer.

Printed woollen stuffs for waistcoats. Chemical blue, scarlet with black, and printed on coloured ground.

148 BECK & HEYNIG, *Glauchau*—Manufacturers.

Carpet articles :—Sofa carpet with figures; carpet bags; bow pockets; and pockets with flaps and leather bottoms.

149 BECK, HENRY, *Glauchau*—Manufacturer.

Tapestry and carpet goods :—Upper parts of shoes, cut in the Turkish fashion; pockets for children.

150 BATZ, PHILIPP, *Leipzig*—Merchant and Manufacturer.

Ladies' bags. Velvet or velvetées; plain; embossed; with steel handles; with handles of mother-of-pearl.

Hand bags. Embossed; velvet, with small artificial roses.

150A TEUBNER, CARL, *Rosswein*—Manufacturer.

Lady's pocket; interlaced work of zephyr worsted yarn.

151 EISENSTUCK & CO, *Annaberg* (Agent, C. H. Treibmann)—Manufacturers.

Bed laces :—white linen and black worsted. Belts :—half silk; ribands with flattened gold and silver wire.

152 HAENEL, EMIL, CHR. *Annaberg* (Agents, Conrad Ehrensperger & Co., 4 Laurence Pountney Place, Cannon Street)—Manufacturer.

Black silk laces, of different prices and qualities; thread laces, of modern and ancient patterns and style.

153 HAENEL BROTHERS, *Annaberg* (Agents, J. A. Hoffmann & Co.)—Manufacturers.

Various fringes—sewing fringes, black silk; black mohair and coloured mohair.

154 OEHMIG & SCHMIDT, *Annaberg* (Agents, Jonas Simonson & Co.)—Manufacturers.

Button-makers' productions. Strings for curtains. Curtain-holders of cotton, half silk and wool; loops for curtains; tassels for curtains.

155 UHLIG'S WIDOW, & JUNCKER, *Annaberg*—Manufacturers.

Button-makers' productions :—Ladies' buttons, with and without tassels. Strings for ladies' robes, with tassels. Tassels for pipes. A garniture of insertion for ladies' robes. Tassels for furniture. Loops for cloaks and manteaux.

156 SCHUBERT, ERNESTINE, *Annaberg*—Producer.

Worked table-cover, on net lace, after designs invented and drawn by Mrs. Schubert.

157 MUEHLENDERLEIN, C. F., *Annaberg*—Manufacturer.

Button-makers' productions :—Twisted fringes of half silk, wool and cotton. Loops, half silk. Chenille, all silk. Mohair laces. India-rubber galloons, of silk, wool, and cotton.

[The button and fringe manufacture of Saxony is principally centralized in the towns of Annaberg and Buckholz. A very large number of persons, old and young, are dependent upon this manufacture, and some thousands of looms are engaged in different processes connected with it.]

158 BACH, G. F., & SONS, *Buchholz, near Annaberg* (Agent, C. H. Treibmann)—Manufacturers.

Fringes :—White cotton, ball, coloured ball, half-silk bullion, half net, half sewing, sewing silk fringes; a large number of different patterns.

Crêtes :—Half silk, worsted, and cotton crêtes.

Trimmings :—Half silk; 60 patterns.

Exhibited for cheapness and execution.

159 HELWEG, HANS, *Buchholz, near Annaberg* (Agents, Ullmann, Hisschhorn, and Co.)—Manufacturer.

Fringes :—White cotton, sewing and ball fringes.

160 HILLMANN, FRED., *Sebnitz, near Dresden*—Manufacturer.

Button-makers' productions :—Silk and half silk buttons. Cords and galloons, of silk and Ispahan, and of silk and genappe. Rich black silk buttons.

161 ROELLER & HUSTE, *Leipzig* (Agents, Gebhardt, Rottman, & Co., 83 Hatton Garden)—Manufacturers.

Oil cloths. Floor cloths, partly varnished; and oiled fustian.

Black oiled muslin; oil cloth sofa-mat; oiled fustian piano-cover; table-covers, with various designs and imitations; table-mats, &c.

The manufacture of oil cloths forms an important branch of Saxon industry, principally concentrated in Leipzig.

162 QUAST, FREDERIC, *Leipzig*—Manufacturer.

Oil cloth; oiled fustian; round table covers; cornered table covers; floor carpets, double oiled.

163 TEUBNER & CO., *Leipzig* (Agents, Gottschalk and Schroeder, 72 Basinghall Street)—Manufacturers.

Oil cloth. Floor cloth; piano cover; table covers; oil fustian, bronze, printed, and imitation of wood; table mats; oil cloth, in imitation of marble and wood.

[The manufacture of oil-cloths is a very important branch of Saxon industry, centred almost entirely at Leipzig, and producing goods for the German market as largely as for foreign parts.]

164 GOEHRING & BOEHME, *Leipzig*—Manufacturers.

Oiled cloths:—Painted in gold and silver and in colours; round table cover of oiled fustian (tortoiseshell pattern); table mats, floor-cloth, linens and tickens for painters, and oiled cloths for hat linings.

165 EINENKEL, I. C. C., *Dresden*—Manufacturer.

Linens and tickens for painters, various lengths and colours. When extra width is wanted, the sewing is done in a way scarcely visible, and without injury to solidity.

166 Weickert, J. D., *Leipzig* (Agent, Charles Holland, 41 Finsbury Circus)—Manufacturer.

Cloths for pianos. Hammer cloths; damper cloths; red and green under-cloth.

167 Muehle, August, *Pirna*—Manufacturer.

Articles made of felt. Ladies' woollen shoes, fine; gentlemen's shoes, of plain felt; gentlemen's and ladies' slippers.

168 Fischer, C. F. A., *Bautzen*—Manufacturer.

Specimens of paper. Plate paper, for stone and steel plates. Printing paper. Tissue paper, white and rose-coloured. Writing paper. Drawing paper, worked on the endless machine, and sized with vegetable glue. Vegetable paper, for counter-drawing. Papers for documents, notes, and bank-notes. Gigantic millboard for waggon manufactories.

[This exhibitor's two factories unitedly contain 3 endless machines, 24 hollanders, 2 satining machines, moved by 5 turbines and 6 water-wheels of 150 horse-power, employ about 200 men, and produce about 1,300,000 lbs. of paper a-year.]

168b Hietel, J. A., *Dresden*—Manufacturer.

Seven tableaus, embroidered with hair and silk, on silk fond; viz., the portraits of Her Majesty of England and His Majesty of Saxony, the flags of all nations, &c.

169 Goetze, Hermann, *Leipzig*—Manufacturer.

Raw German hair, called Brabant hair, of various lengths and colours, including a weft of two yards and a half. Natural hair, completely purified and prepared for use, applicable for curls, &c., with specimens of the same hair dyed. Hair, artificially dressed. The exhibitor states that he employs more than seventy men in the preparation of human hair for sale.

[The peculiar characters of this substance, which are the same in kind, though different in degree, in all cases, are its resistance to decay, its elasticity, and its strength. Chemically, hair consists of the usual organic elements—carbon, hydrogen, oxygen, and nitrogen, united with several earthy and metallic oxides. Human hair is employed to some extent in ornamental work.—R. E.]

170 Kindermann A., *Buchholz* (*Agent*, C. H. Triebmann)—Manufacturer.

Papier-maché:—Groups of animals of various sizes and execution.

171 Feistel & Son, *Aue, near Schneeberg*—Manufacturers.

Snuff-boxes of tortoiseshell; and metal with paintings. Ladies' box, with silver arabesques. Scottish boxes. Draught-board. Ivory box, with painting.

172 Rockhausen, William, *Johanngeorgenstadt*—Manufacturer.

Fancy-boxes for toilet; travelling case of rosewood; box for counters; boxes of mother-of-pearl; cigar-box, &c.

173 Papperitz, Joh. Fr., *Dresden*—Manufacturer.

Saddlers' goods:—Saddles in the English style, flat, wadded, and covered with hog-skin, complete. Bridle—the leather being pierced, and the buckles covered with leather.

173a Haussmann, Ludwig, *Dresden*—Manufacturer.

A pair of complete horses' harnesses, with collars, brown round reins, counterholds, silver plated buckles, steel bridle.

Three bridles, of different descriptions. Ten whips.

174 The Royal Saxon Manufactory of China, *Meissen, near Dresden* (Agent, Dr. Seyffarth, Royal Commissioner for Saxony)—Producer.

China. Royal blue vases, with portraits of Her Majesty the Queen of England and H.R.H. Prince Albert. Chandelier, with nine girandoles, coloured and gilt.

Camelia, in its natural state and colours, standing in a pot. Vase, after M. Semper's design.

Vase, on a pedestal, with figures after Watteau, with flowers and figures in relievo.

Mirror-frame, with similar figures, painted in colours, with flowers in relievo, richly gilt, with two girandoles.

Vases, painted with flowers and bronzed. Figures: a flute-player and a girl playing the guitar, &c.

Etagères. Dessert-dishes and plates, a pair of cups with the portraits of the King and Queen of Saxony. Coffee and tea services, &c. Figure, a girl feeding doves. Fruit-basket. Tea-table appurtenances. Tableau, the female lace-maker.

Six pieces with the armorial bearings of the kingdom of Saxony. Plate.

Busts: Danaide, after Mr. Rauch; King of Saxony; King of Prussia; Madonna; Socrates. Figure, Ganymede, after Thorwaldsen. Shades.

China vessels, for the use of chemists and apothecaries.

[The first European manufactory of porcelain was established at Meissen, under the auspices of Augustus II., Elector of Saxony and King of Poland. Böttcher, an alchemist, having made some crucibles which assumed the character of Oriental china, appears to have originated the establishment. His first ware was made from a red earth found at Meissen, and he did not produce white porcelain until 1709, when he used the *kaolin* (china-clay) of Aue, near Schneeburg, for his pottery. From that period the Meissen porcelain has been highly esteemed, and the manufactory has been constantly under the direction of the Government, who have employed the most skilful artists and workmen selected from all parts of Europe.—R. H.]

175 Adler, Charles, *Königsbrück*—Manufacturer.

Vessels of clay:—Soup-urn, coffee-pots, flower-vases, tea-pot, and milk-pots.

Specimens of children's playthings.

176 Bucker, H., *Dresden*—Designer and Painter.

Paintings on china:—Brooches of painted china enchased in bronze; small china paintings of various kinds, after classical pictures.

177 Walther, Gustav, *Dresden*—Painter.

Enamel paintings on china, copies from classical original; plates for a bracelet and brooch.

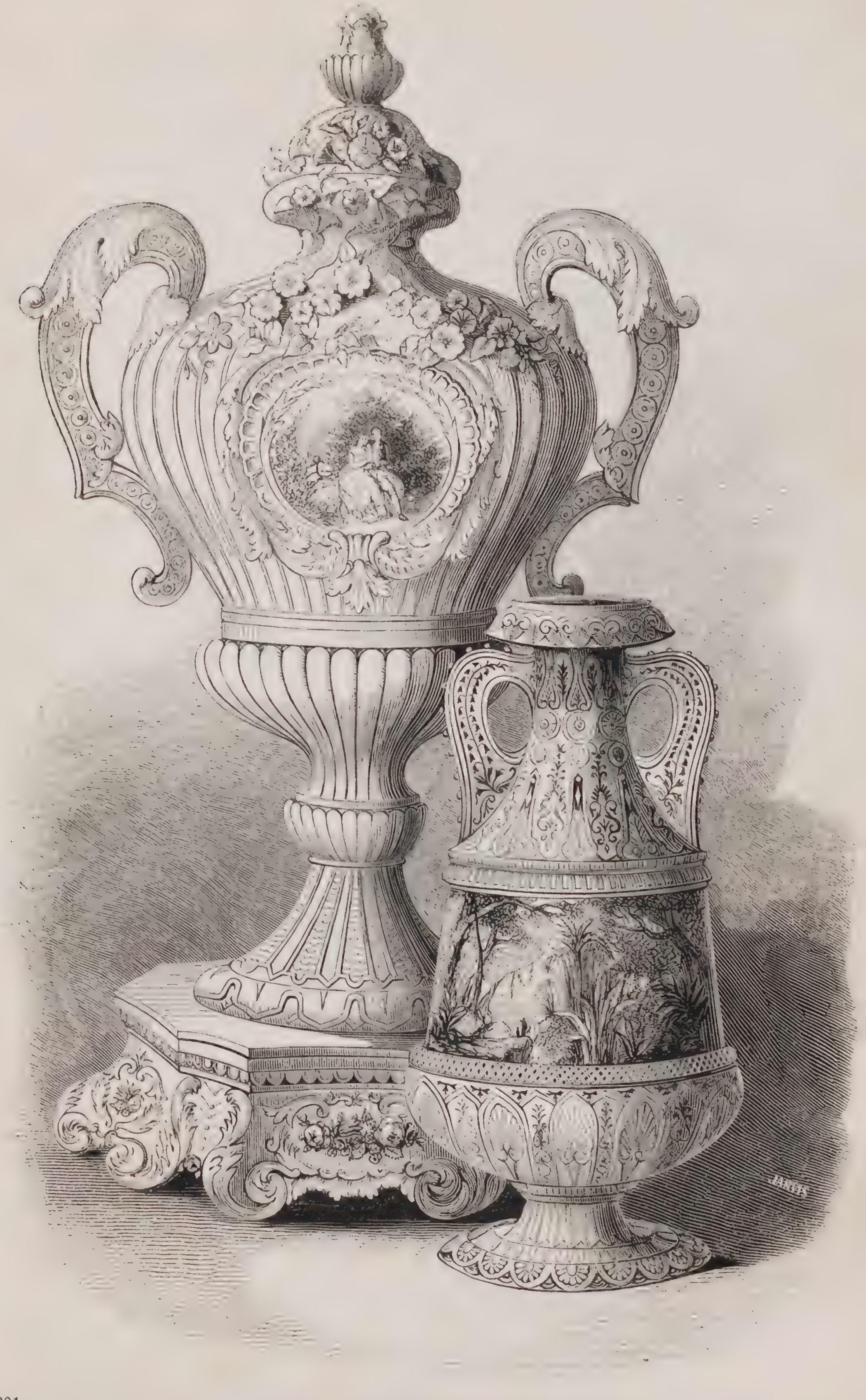
178 Brockhaus, F. A., *Leipzig*—Manufacturer.

Printed books. A collection of 356 volumes, all printed in the year 1850, in the office of the exhibitor, in elegant covers.

179 Barth, Ambrosius, *Leipzig*—Proprietor.

Ornamental typographical works. Minstrels of Germany, edited by Herr Von der Hagen, printed on parchment; the vignettes, as well as the initials, painted in gold.

Ancient Egypt, by Mr. M. S. Schwarze, printed in twenty-seven languages, being the first instance of Egyptian hieroglyphics having ever been executed in print; it has been done by means of more than 3,000 stamps cut for this purpose. Talmud Babli; Babylonian Talmud in Hebrew, with German translation, and the Commentaries of Raschi and Josephoth, edited by Dr. E. M. Pinner, vol. i.



A LARGE VASE, IN PORCELAIN. FROM THE ROYAL PORCELAIN MANUFACTORY, DRESDEN.
THE SMALLER FROM THE BERLIN PORCELAIN MANUFACTORY.
ZOLLVEREIN.

180 Hirschfeld, F. B., *Leipzig*—Printer.

Products of the art of printing. A picture in polychromic print. Specimens of types.

181 Meinhold & Sons, *Dresden*—Manufacturers.

Four specimens of coloured printing.

182 Schelter, Gustav, *Dresden*—Inventor and Manufacturer.

Products of a letter foundry:—Complete set of the last specimens of printing types; music-book done with types, cast and cut in English steel, in gilt frames; musical textbook executed with types, cast and cut in English steel, in a new style.

Proof-sheet of printing with lately-invented stenographical types, on Mr. Gabelsberger's principle, in gilt frame.

183 Jahn, F. H., *Dresden*—Engraver.

Engraving, with specimens of several engravers' works. Exhibited for its execution.

184 The Royal Saxon Military Plan Office, *Dresden*—Producer.

The three first numbers of the engineers' map of the kingdom of Saxony, exhibited for execution.

185 Kietz, Theodore, *Leipzig*—Producer.

A relievo, in ivory (the portraits of Clara and Robert Schumann).

186 Rietschel, Professor, M.R.A.F.A., *Dresden*—Sculptor.

Sculptures:—Christ and angel, in relievo, Carrara marble. Cupid mounted on the back of a panther, in relievo, in Carrara marble.

Plaster image of the Virgin.

187 Buettner, Gustavus, *Dresden*, *Saxony*—Manufacturer.

Three electrotype copies of classical shields.

188 Kügler, Henry, *Dresden*—Producer.

A signet, in form of a vase, ground out of one piece of rock crystal.

WURTEMBURG

Agents in London, Messrs. Brand & Schiedmayer, 6 *Pinner's Hall, Old Broad Street, City.*

The number of exhibitors representing this State is about 110; the contributions of some of these form one of those features of the Exhibition which are not likely to be soon effaced from the memory. The conspicuous group of Stuttgart horses, the models in plaster of a similar group in Carrara marble, placed in the Royal Park at that place, must be reckoned among these; and the beautiful specimens of the art of the taxidermist, displayed in the wonderful and mirth-exciting groups of stuffed animals, and in those made up to imitate the painted conceptions of great artists, have likewise a claim to the same character. Specimens of raw materials and produce are exhibited, and include mill-stones, colours, dyes, preserved fruit, &c. Among the horological and philosophical instruments are several of improved construction. Perhaps more interest will by many be considered to attach to the Dutch clocks, exhibited as extraordinary specimens of economy in production, than to the more elegant but also more costly instruments of precision. Some musical instruments are also shown. The textile manufactures in cotton, wool, and fleece, are represented, but not to a large extent. The production of toys, and miscellaneous articles of fancy ware, of dolls, &c., forms an important department of industry in this State, and a considerable number of exhibitors have presented their productions of this class for exhibition. A number of specimens of cutlery and of leather and paper manufactures are shown. In all these articles—and, as a general remark, in those of every foreign state,—it requires but a small degree of attention to detect those peculiar differences in the products, both as to character and style, which indicate the national prevalence of taste, influencing, as it must always do, the method of manufacture in a small degree, but the manufactured article itself altogether.—R. E.

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1 **Zeller, Fred,** *Neckartenzlingen, near Stuttgart.*

Specimens of stone taken from the quarries of the exhibitor, particularly adapted for millstones.

2 **Bonz & Son,** *Boeblingen, near Stuttgart*—Manufacturers.

Kreosote produced from common tar. Iodide of potassium and other chemicals.

[The remarkable chemical product, kreosote, was discovered by Baron Reichenbach. It is obtained by a somewhat operose distillation of tar in a metallic vessel. It has several valuable medicinal qualities; it is also used in curing provisions.—R. E.]

3 **Breuninger & Son,** *Kirchheim, Teck*—Manufacturers.

Ultramarine. Exhibited for the beauty and brilliancy of the colour and its cheapness.

4 **Jobst, Frederic,** *Stuttgart*—Manufacturer.

Sulphate and other compounds of quinine, kali hydroiodinic, of great purity.

[Sulphate of quinine is obtained in largest quantity from yellow cinchona bark. By careful chemical manipulation it crystallizes in beautiful needle-like forms. Its medicinal value is that of a febrifuge tonic.—R. E.]

5 **Leube Brothers,** *Ulm*—Manufacturers.

Hydraulic chalk cement, hardening under water in a few minutes.

6 **Siegle, Henry,** *Stuttgart*—Manufacturer.

Carmine, Munich carmine-lac, madder-lac, and different azure colours; a yellow colour for confectioners, adapted for such purposes on account of its innocuous qualities.

7 **Abt, W.,** *Esslingen*—Manufacturer.

Yellow colour, which, consisting entirely of innocuous substances, is adapted for the use of confectioners.

8 **Breuning, Fred.,** *Möhringen, near Stuttgart*—Producer.

Samples of dried fruits: bilberries. Used as an astringent.

9 **Schmidt, W.,** *Calmbach*—Producer.

Samples of dried fruits: bilberries.

10 **Ficker, C.,** *Kirchheim Teck,*—Producer.

Samples of dried fruits: plums, pears, apples, prunes, and cherries without stones: for dessert.

11 **Noerdlinger, Professor,** *Hohenheim, near Stuttgart.*

Various collections of all kinds of wood, showing their relative qualities for the use of agriculturists.

Collections of insects, especially those which infest the fields.

12 Schoettle, George James, *Ebhausen, Nagold*—Manufacturer.

A heckle, or flax comb.

13 Wolff, Fred. A., *Heilbronn*—Manufacturer.

Distilling steam apparatus for fluids with new refrigerator. Distilling and cooking apparatus for the use of chemists and others.

Apparatus for soldering lead by means of atmospheric air and hydrogen gas, generating a most intense heat; several plates of lead of various thickness soldered by means of the apparatus; graduated vessels, for measuring fluids accurately.

This apparatus is represented in the illustration on the next page.

[The presence of hydrogen gas unquestionably facilitates and expedites the process of soldering. When combined in certain proportions with atmospheric air it forms an explosive mixture, but with proper precautions it may be safely burnt at the end of a small jet, and it gives out an intense heat when so employed.—R. E.]

14 Kohl, G. Henry, *Stuttgart*—Manufacturer.

Gilt sabre, with modern ornaments.

Roman sword, executed after drawings of the time of Constantine the Great, with Christian emblems.

Gilt cutlasses and daggers, in various styles.

15 Royal Gun Manufactory, *Oberndorf*—Manufacture.

Gun for infantry, rifle with bayonet, and common rifle, made of cast steel.

16 Haller, Fs., *Schwenningen*—Manufacturer.

Dutch clocks with weights of various sizes; alarum clocks, &c. Exhibited for their extraordinary cheapness.

17 Bacher, Augustus, *Stuttgart*—Manufacturer.

A novel escapement for watches, constructed without a balance-wheel; a watch on this principle; seconds-watch, with compensating escapement, and maintaining power, without distinct second-work.

A seconds-watch going for a week, constructed with five wheels only; the hours are indicated by numbers appearing on the hands of the watch; an ivory watch, constructed entirely of ivory; a watch with lever escapement, working on a plate of steel.

Chronograph constructed on a new principle, distinguished by the great accuracy with which any velocity may be measured.

[An escapement is a mechanical contrivance for transmission, at equidistant intervals of time, of the maintaining power of the watch or clock to the regulator, and its office is to allow a tooth of the wheel, with which it acts, to escape or pass onwards at such intervals of time as are measured by the regulator.—J. G.]

18 Holch, William, *Hall*—Manufacturer.

Regulator, going eight days, in mahogany case, silvered dial, and jewelled escapement.

19 Stoss, V., *Ulm*—Clock Manufacturer.

Patent small church-clock, striking hours and quarters, with a new escapement, intended to prevent wind and tempestuous weather from injuring the hands. An eight-day clock.

20 Dieudonne & Blaedel, *Stuttgart*—Manufacturers.

Grand pianoforte with double action; cottage pianoforte.

21 Doerner, F., *Stuttgart*—Manufacturer.

Grand pianoforte in rosewood; square pianoforte.

22 Lipp, Richard, *Stuttgart*—Manufacturer.

Square pianofortes. The hammers are fitted up with a new and more durable kind of felt, intended to assist in producing greater clearness of sound.

23 Schiedmayer, J. L., & Sons, *Stuttgart*—Inventors and Manufacturers.

Grand pianoforte, in rosewood, with newly-invented patent double action.

Square pianoforte, in mahogany.

Cottage pianoforte, in nutwood, decorated and ornamented with original wood carvings.

24 Helwert, James, *Stuttgart*—Manufacturer.

New bassoon, with nineteen keys, of improved construction.

25 Rexer, Charles, *Stuttgart*—Manufacturer and Inventor.

Pair of kettle-drums for orchestras, which are tuned on a new and simple plan. A large drum. A military drum.

26 Kinzelbach, T., *Stuttgart*—Manufacturer.

Improved diastimeter for the use of the army, 1¾ inch object-glass, 21¼ inches focus, with two parallel wires moveable at the same time, and at equal distances from the centre to the extent of the field of view, along a scale divided to minutes. A table is engraved upon the front plate near the eye-glass, which contains the various amounts of minutes and quarter minutes, with the corresponding distances of infantry or cavalry in paces.

Surveying cross, with a graduated limb and vernier reading to five minutes; intended for use in hilly countries. Improved Wollaston's goniometer, with an auxiliary glass for more conveniently measuring off the angles of prisms and crystals. Silver hydrometer, constructed to measure the density of such liquids as wine, beer, or milk.

Telescope of 23¼ inches focal length, and 2¼ inches object-glass, mounted equatorially, and furnished with divided arcs for right ascensions and declinations; endless screw motion; a level; adjusting screws; terrestrial and astronomical eye-pieces.

27 Hecht & Arnold, *Reutlingen*—Manufacturers.

Toilinets and valentias, exhibited for cheapness and quality of material.

28 Kolb & Schuele, *Kirchheim*—Manufacturer.

Coloured cotton quiltings; green and blue cotton cameleon; coloured canvas, gingham, and dimity bed-stuff; white cotton tricot; green cotton umbrella stuff, and grey cotton stuff.

29 Weigle, J. J., *Ludwigsburg*—Manufacturer.

Quiltings and toilinets of various patterns.

30 Schill & Wagner, *Calw*—Manufacturers.

Woollen cloths; black satin cloth; flannels of various qualities and colours.

31 Finckh, John G., *Reutlingen*—Manufacturer.

Several specimens of woollen cloth, distinguished by the brilliancy of their dye.

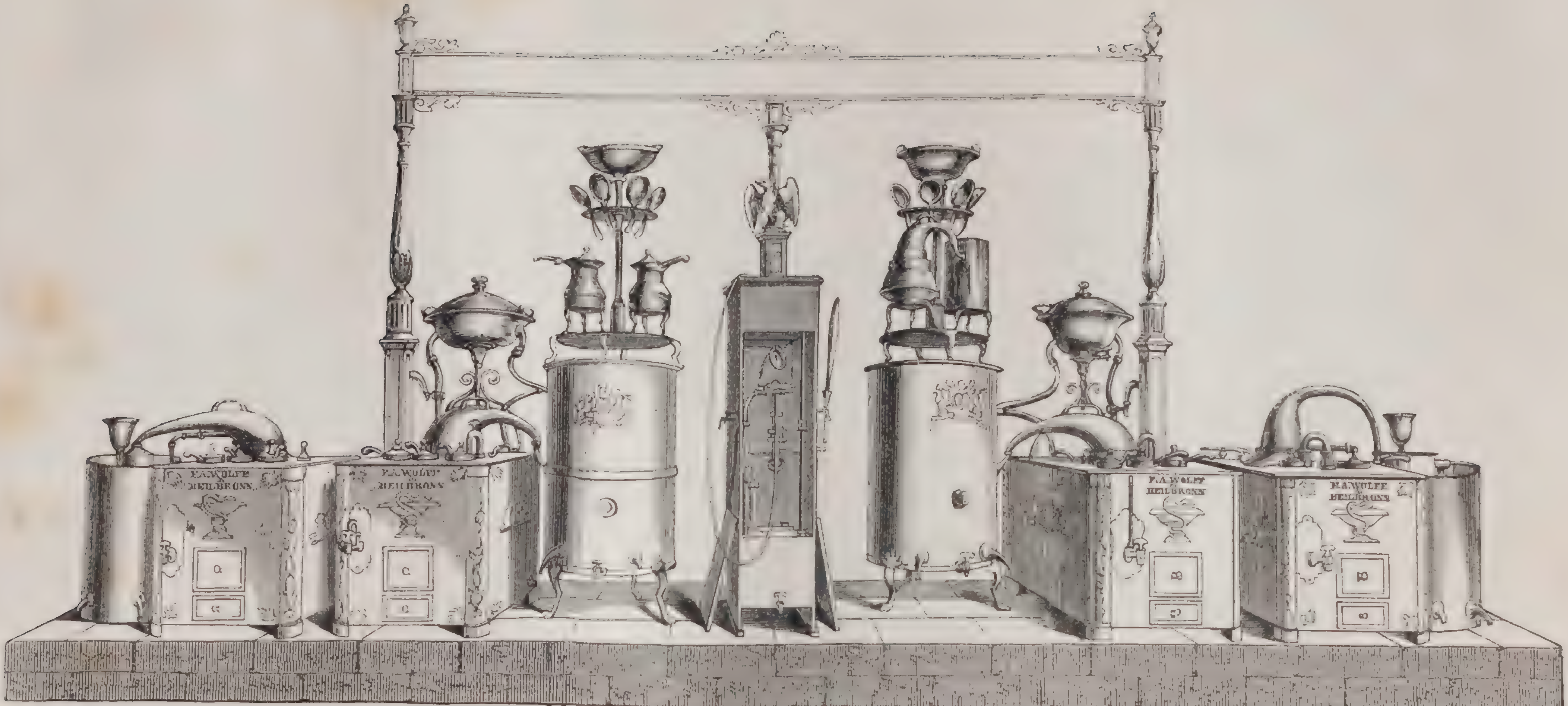
32 Schoenleber, Aug., *Bietigheim*—Manufacturer.

Woollen trouser stuff, new and elegant patterns for summer and winter wear.

Several specimens of worsted yarn in various numbers, dyed and undyed.

33 Faber, Charles, *Stuttgart*—Manufacturer.

Damask table-covers of linen, of various patterns and sizes; small desert napkins with fringes; brocaded tri-



Wolff's Chemical Apparatus.

coloured silk furniture stuffs. The latter are exhibited on account of their fine and heavy quality, and particularly to show the silk industry of the country, the raw material being entirely produced in royal establishments.

34 Lang, A. F., *Blaubeuren*—Manufacturer.
Samples of bleached linen, and linen handkerchiefs.

35 Manufactory of Linen Yarn, *Urach.* (Messrs. Escher, Wyss & Co., Zurich, and M. Schlumberger & Co., Gubviller, Proprietors.)
Samples of linen yarn.

36 Seemann, C. & H., *Stuttgart*—Manufacturers.
Samples of bleached linen of machine yarn, made up in the Irish manner, numbers of yarn 60 to 160; made up in the Dutch manner, numbers of yarn 70 to 400; of unbleached linen drills, numbers of yarn 30 to 60; and white linen drills, numbers of yarns 30 to 60; printed cambrics.

37 Bantlin, G. D., *Reutlingen*—Tanner.
Specimens of calf leather; upper-leather leggings ready cut out.

38 Eckhardt, F. M., *Ulm*—Manufacturers.
Black varnished leather, exhibited for its softness and tanning, and peculiar varnish.

39 Reichhold, George, *Stuttgart*—Manufacturer.
Fancy leather goods: portfolios, albums, porte-monnaies, cigar and writing-cases.

40 Schenck, E. G. & Co., *Stuttgart*—Manufacturers.
Fancy leather goods: portfolios, books, albums, porte-monnaies, cigar and letter cases, &c.

41 Schaeuffelen, G., *Heilbronn*—Manufacturer.
Coloured and white pasteboard.
Tissue paper, white, and in brilliant colours.
Letter-paper, exhibiting its quality as regards thinness, compactness, and clearness.
Post paper, white and coloured, in bright, lively colours, exhibited as thin, compact, and clear. The name of the manufacturer is marked in the substance by a patent contrivance for machine paper.
By a contrivance recently introduced by the exhibitors any name may be marked in the substance.

42 Kaemmerer, C., *Stuttgart*—Manufacturer.
Portfolio, containing pasteboard for the use of painters, of both rough and smooth surface.

43 Faulhaber & Leube, *Ulm*—Chemical Factors.
Rheumatic pitch-plaister: may be rolled up without sticking together, or rubbing the composition off its surface.

44 Rauch Brothers, *Heilbronn*—Manufacturers.
Fancy paper. This paper, by a process invented by the exhibitors, is coloured on both sides of a single sheet of different shades without pasting two sheets together.

45 Veiel, G., & Co. *Stuttgart*—Manufacturers.
Fancy paper, and enamelled cardboard.

46 Kohler, F., *Goeppingen*—Manufacturer.
Printed woollen vestings. Printed linen handkerchiefs.

47 Otto, Henry, *Nurtingen*—Manufacturer.
First, second, and extra Turkey-red yarn.

48 Zais, William, *Cannstadt*—Manufacturer.
Three pieces of Turkey-red printed cotton stuffs of various patterns.

[Turkey-red is a beautiful dye produced from madder. The colour is often remarkably influenced by the presence or absence of calcareous matter in the water. A certain quantity appears to be essential for the production of brilliant colours.—R. E.]

49 Neuburger & Sons, H., *Dietenheim, near Ulm*—Manufacturers.
Embroidered curtains, in tasteful and elegant patterns.

50 Robeck, Charles, *Nurtingen, near Teck.*
Cards, scollops and "entre deux." Knitting work.

51 Tanner, Theophilus, *Stuttgart*—Designer and Inventor.
Designs for tapestry; printed furniture materials; and large carpets.

52 Van Zwerger, Deffner, & Weiss, *Ravensburg*—Manufacturers.
Curtains, white and red striped; and of embroidered net and muslin.

53 Hils, Haas, & Co., *Schramberg*—Manufacturers.
Knitted woollen hosiery, petticoats, hose, stockings, men and women's cord or lace shoes, &c.

54 Rehm, F. F., *Reutlingen*—Manufacturer.
Woollen and cotton hosiery goods. Laces and collars, called "eternelles." Knitting work, &c.

55 Boelsterli, Charles, & Co., *Stuttgart*—Manufacturers.
Tools of every description, for the preparation and carving of all kinds of wood.

56 Goebel, Godfrey, *Stuttgart*—Manufacturer.
Tools for the preparation of wood.

57 Dittmar Brothers, *Heilbronn*—Manufacturer.
Patent razors and razor-strops. Penknives, paper-cutters. Wood, Circassians, Greek, and yataghan knives, daggers, hunting hangers, and stilettos. Garden knives and implements, &c.

58 Haueisen & Son, *Stuttgart*—Manufacturers.
A variety of scythes, as they are used in various countries.

59 Buehrer, Fred., *Ludwigsburg*—Manufacturer.
Toys, representing various kinds of working utensils, in copper. Pastry moulds.

60 Stohrer, T. F., *Stuttgart*—Manufacturer.
Brass and steel wires; metal wire for the manufacture of paper. Metal wire gauze. Brass wire and horse-hair sieves. A drum.

61 Wagner, Charles, *Esslingen*—Brazier.
Pastry moulds of various shapes and sizes.

62 Rexer, Frederick, *Stuttgart*—Manufacturer.
Brass and steel wire. Metal wire for the manufacture of paper. Metal wire gauze. One pair of kettle drums, a large and a military drum.

63 Erhardt & Sons, *Gmünd*—Manufacturers.
Bronze chessmen in a polished wood case. Game of chess with fixable figures. Various useful and ornamental articles.

64 Faist & Steinhaeusser, *Schramberg*—Manufacturers.
Garnets cut in various sizes or shapes. The rough stones are imported from Bohemia.

[The garnet is an anhydrous silicate of alumina and of lime. Its colouring matter is iron. Garnets are found in great abundance in Bohemia, from whence they are largely exported.—R. E.]

65 **Bruckmann, P., & Sons**, *Heilbronn*—Manufacturers.

Silver-plated tea-kettle, coffee and tea pots, cream jugs, sugar-basins, trays, tea canister, fruit baskets and plates, salvers, étagères, sauce-pot, chandeliers, candlesticks, cups, &c.

Large decorated lamp used in churches.

66 **Groeber, Albert**, *Riedlingen*—Manufacturer.

Fruit-basket in wrought silver, remarkable for the workmanship.

67 **Lenz, Charles**, *Gmünd.*

Silver spectacle frames.

68 **Uechtritz & Faist**, *Schramberg*—Manufacturers.

Crockery ware. Flower-pots in black enamel. Fruit-baskets or plates in green enamel. Entire table-service in white earthenware. Several tea-services, with prints, in black and blue colours.

69 **Wasserott, Staib**, *Ravensburg*—Manufacturer and Inventor.

Gothic window in pointed architecture. Gothic rosette, window, and monument, of terra cotta.

70 **Wirth, F.**, *Stuttgart*—Manufacturer.

Dressing and writing table.

Wardrobe, with ornaments of wood carvings, modelled by the exhibitor.

71 **Deffner, Charles**, *Esslingen*—Manufacturer.

Iron flower-table; cigar-tray; writing-case; thrift-box; washing-tubs; sugar-box; working-baskets; chess-board; fruit-baskets; pictures; and coffee-trays.

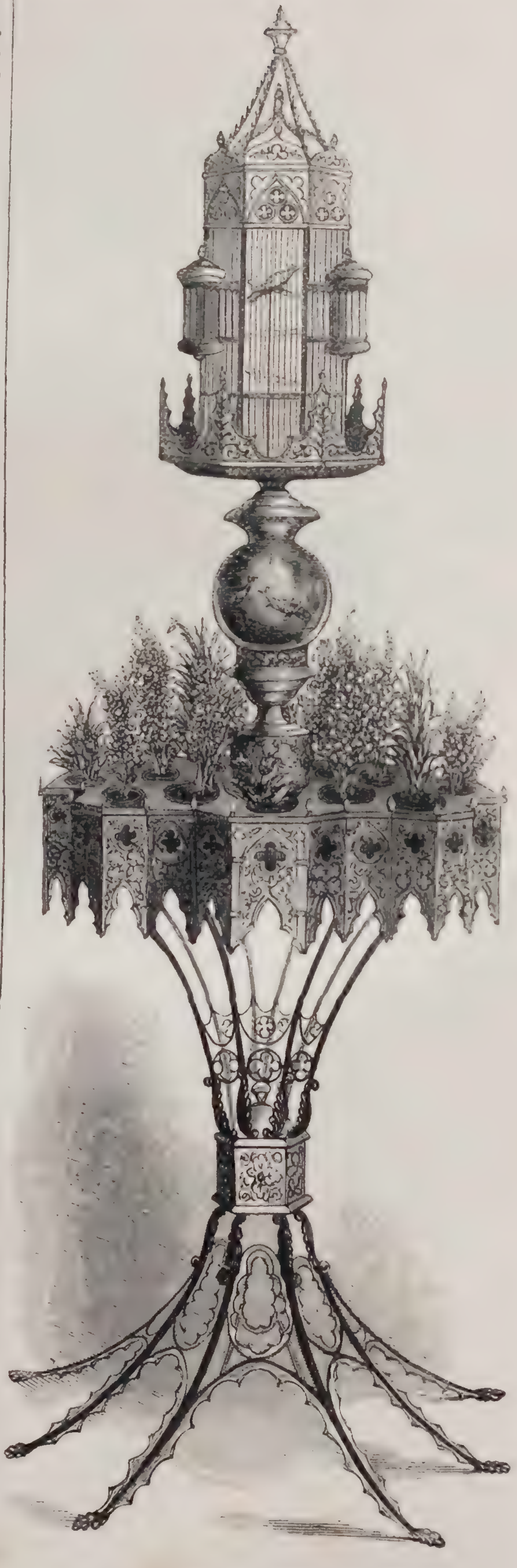
Bird-cages in great variety.

Silver-plated speaking trumpet; and miscellaneous articles of hardware.

72 **Rau & Co.**, *Göppingen*—Manufacturers, Inventors and Proprietors.

Various articles of japanned tin-plate and papier maché, several inlaid with mother-of-pearl. Plated metal articles. The laying-in of mother-of-pearl in japanned tin ware is claimed as new.

An ornamental japanned bird-cage and flower-stand. This object is represented in the adjoining illustration.



Rau's Ornamental Bird-cage and Flower-stand.

73 ***Rometsch, Charles***, *Stuttgart*—Inventor and Manufacturer.

Patent metallic writing slates. These slates are prepared by a new invention of the exhibitor, which renders them of great durability, as they consist of a thin metal plate, on which the slate is laid.

74 **Vetter & Erno**, *Stuttgart*—Manufacturers.

Gilt and painted cornices and picture frames. Manufactured on a new system, by which they can be made more cheaply than hitherto.

75 **Lettenmayer, G.**, *Stuttgart*—Manufacturer.

A tableau of gilt cornices. Manufactured on a new and economical system.

76 **Abele & Co.**, *Stuttgart*—Manufacturers.

Snuff-boxes made of japanned papier maché, with ornamental drawings and inlaid mother-of-pearl, or gold and silver.

77 **Heller, Charles**, *Stuttgart*—Manufacturer.

Gilt bas-relief of gypsum. Samples of gilt paper, &c.

78 **Seeger, Eugenius**, *Esslingen*—Manufacturer and Inventor.

New process for making bitumen mosaic-work. This manufacture is exhibited as claiming several advantages over similar works made of wood, marble, terra cotta, &c., such as cheapness, rapid production, resistance to damp, higher temperature than marble, lively colours, and great firmness. The thickness of the coloured plates is generally about a quarter of an inch, but this can be increased.

79 **Haas, F. P.**, *Schramberg*—Proprietor.
Specimens of straw plaitings, viz.—hats, bonnets, baskets, bands, fringes, tassels, &c.

80 **Klein, F. G.**, *Tübingen*—Manufacturer.
Cloth, hair, velvet, and billiard brushes; large brush for cloth manufacturers.

81 **Kieser & Co.**, *Gaildorf*—Manufacturers.
Gothic tower, made of lignum vitæ; the same for a thermometer, and in bone. Match-box of lignum vitæ. Jewel-tray. Seals. Cane-handles. Money-box. Bonbonière and napkin rings.

82 **Wittich, A., Kemmel & Co.**, *Geisslingen*—Manufacturers.
Various assortment of bone and ivory fancy goods, consisting of cane-handles, brooches, baskets, thimbles, paper-knives, &c.

83 **Schmidt, Frederic**, *Geisslingen*—Producer, Inventor, and Manufacturer.
Fancy goods in bone and ivory, cane-handles, brooches, baskets, &c.

84 **Weber, C. F.**, *Esslingen*—Manufacturer.
Handles and buttons for carvers in ivory, deer-horn, wood, and lead, with ornaments.

85 **Stoll, Charles**, *Ulm*—Manufacturer.
Ivory fan, carved; bone fan, various shapes. Carved ivory snuff-boxes, inlaid with tortoiseshell.

86 **Weber, G., & Co.**, *Esslingen*—Manufacturer.
Fancy wooden boxes. Collection of carved ivory, stag, and horn handles.

87 **Baur Brothers**, *Biberach*—Manufacturers.
A variety of devices; pastils, and confectionery goods, tragacanth-flowers, and birds with real feathers, &c.

88 **Goll Brothers**, *Biberach*—Manufacturers.
Various devices in confectionery, &c., made of tragacanth gum.

89 **Roth, William, jun.**, *Stuttgart*—Manufacturer.
Specimens of comfits, sugar-plums, bonbons à liqueur, conserves, sugar devices, dragés, lozenges, chocolate.

90 **Riess, F. H.**, *Gmünd*—Manufacturer.
Wax ornaments, candles and tapers, baskets, flowers, cages, books, fruits, tea-cups, &c.

91 **Troeglen, Gustav**, *Ulm*—Manufacturer.
Lozenges and confectionery, with a lion hunt, made of tragacanth gum.

92 **Hedinger, Chas.**, *Stuttgart*—Manufacturer.
Walking-sticks and canes, with hooks and heads of ivory, buffalo, stag-horn, &c., finely engraved. Sticks and canes for umbrellas and parasols. Frames for umbrellas and for a travelling pocket-cane.

93 **Schumacher**, *Bietigheim, near Stuttgart*—Manufacturer.
Samples of artificial whet-stones, pumice-stones, and polishing powder, for the use of mechanics in wood, steel, &c., and for japanners.

94 **Blumhardt, Henry**, *Stuttgart*—Manufacturer.
Collection of toys made of japanned tin, lead, pewter bronze, iron and wood.

95 **Rominger, John**, *Stuttgart*—Manufacturer.
Collection of tin and glass toys.

96 **Dieterich, C. F.**, *Ludwigsburg*—Manufacturer.
Kitchen, stable, and garden implements for children.

97 **Knosp & Backe**, *Stuttgart*—Inventors and Manufacturers.
"Furnished apartments for dolls," (dolls' houses,) in two parts, made of pasteboard.

98 **Rock & Graner**, *Biberach*—Manufacturers.
A large collection of toys and trifling articles of tin and iron plate, brass, papier maché; carriages of different sizes and constructions; countries, mountains, chapels, hermitages, mills with water-house and reservoir; ships, &c.

[The toy-trade of Wurtemberg is known throughout Europe and America. Immense quantities of toys are exported to various countries. The manufacture is largely carried on in the Black Forest.—R. E.]

99 **Reuss Brothers**, *Stuttgart*—Manufacturers.
Samples of stearine candles in various sizes. Stearine soap, and cocoa-nut oil.

100 **Sutorius, C. F.**, *Gmünd*—Manufacturer.
Samples of lucifer matches without the combustible mass.

[Before the discovery of the combustible compound now applied to lucifer matches, an ingenious philosophical instrument had shown the possibility of obtaining instantaneous light by discharging a jet of hydrogen gas upon a mass of spongy platinum; and ornamental jars for this purpose, in which hydrogen was produced by the reaction of zinc and dilute sulphuric acid, were in common use. It is still to be ascertained what is the precise nature of this curious phenomenon; experiment has revealed no change either in the weight or composition of the platinum capable of accounting for the ignition of the gas. The compound now universally used for matches consists principally of a paste of phosphorus, in combination with other chemical substances.—R. E.]

101 **Lindauer, Miss E. L.**, *Stuttgart*—Manufacturer.
A large collection of artificial flowers.

102 **Kuhn, Jeffrey**, *Ulm*—Manufacturer.
Samples of lucifer-matches, &c.

103 **Viehhaeuser Gustav**, *Ludwigsburg*—Manufacturer.
Samples of artificial leaves.

104 **Wagner, Ferd.**, *Stuttgart*—Builder.
Samples of whet-stones.

105 **Von Hofer, Lewis**, *Stuttgart*—Sculptor.
Models of two large groups, representing the breaking-in of horses. The originals were Arabian horses, bred in one of the private studs of His Majesty the King of Wurtemberg, 10 feet high. These groups are executed in Carrara marble, in the royal park of Stuttgart, measuring 15 feet high.

106 Holder, T. M., *Stuttgart*—Inventor and Painter.

Pictures in miniature, painted on ivory in a new method. This system consists in painting the flesh especially in positive unmixed colours.

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107 Ploucquet, H., *Stuttgart*—Producer.

Groups of stuffed animals and birds. A stag-hunt. Boar-baiting; the same in miniature.

Groups and nests of different kinds of birds of prey. Several hawks pouncing upon owls, &c. Groups of various kinds of domestic birds with their young, &c. The groups of the artist are remarkable as specimens of taxidermy, and are represented in the accompanying Plate.

[Among these groups of animals are several in imitation of the attitudes, habits, and occupations of rational creatures. The precise expression of intelligence given to these animals has formed one of the many attractions of the Exhibition. Among the more important of the groups there arrayed is one from the tale of Reynard the Fox, a subject made use of by Goethe for one of his poems, and illustrated by the painter Kaulbach. The groups of animals of this series are modelled, for they can scarcely be reckoned among specimens of the art of taxidermy, after the designs of that great painter, and a series of six tableaux is thus presented.

The story of Reynard the Fox, illustrated by these animals, may be thus briefly told :—" The Lion, the king of beasts, made a proclamation summoning all animals to his royal court, and all but Reynard the Fox duly obeyed the call. In his absence grievous accusations were laid against him, and particularly by one Chanticleer, whose children he had barbarously murdered after gaining admission into the farm-yard under pretence of being a hermit. The King, determining to punish Reynard, sent first the Bear, and then the Cat after him, who bore a royal mandate to the gate of Reynard's castle, where he is shown waiting for him. The Cat, like the previous messenger, is artfully led into a trap and Reynard escapes. At length, on the Badger coming to fetch him, Reynard consents to appear in court, where he is condemned to execution. While on the scaffold, by a subtle speech, he persuades the King (the Lion) from his purpose by telling him of a great concealed treasure. In testimony of his veracity he brings forward the hare as a witness, which forms another of the groups. Reynard then, considering himself under excommunication, resolves on a pilgrimage to the Holy Land, and is shown in his pilgrim state with a rosary and a palmer's staff. A hare, passing before Reynard's castle, sees him in a pilgrim's garb, and Reynard, flying upon the unsuspecting traveller, uses his palmer's staff with intent to murder him. This is the subject of another group. The hare, fleeing to the king, informs him of the attempt, and the King resolves to destroy Reynard and his castle of Malepardus forthwith. The conclusion of this tale is a combat between Reynard and one of his accusers, in which the former by his art comes off victor, and returns loaded with courtly favours to his castle, where he is represented seated at ease."]

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108 Wagner, T., *Stuttgart*—Inventor, Designer, and Producer.

Statue, "Penitent Magdalen," in Carrara marble.

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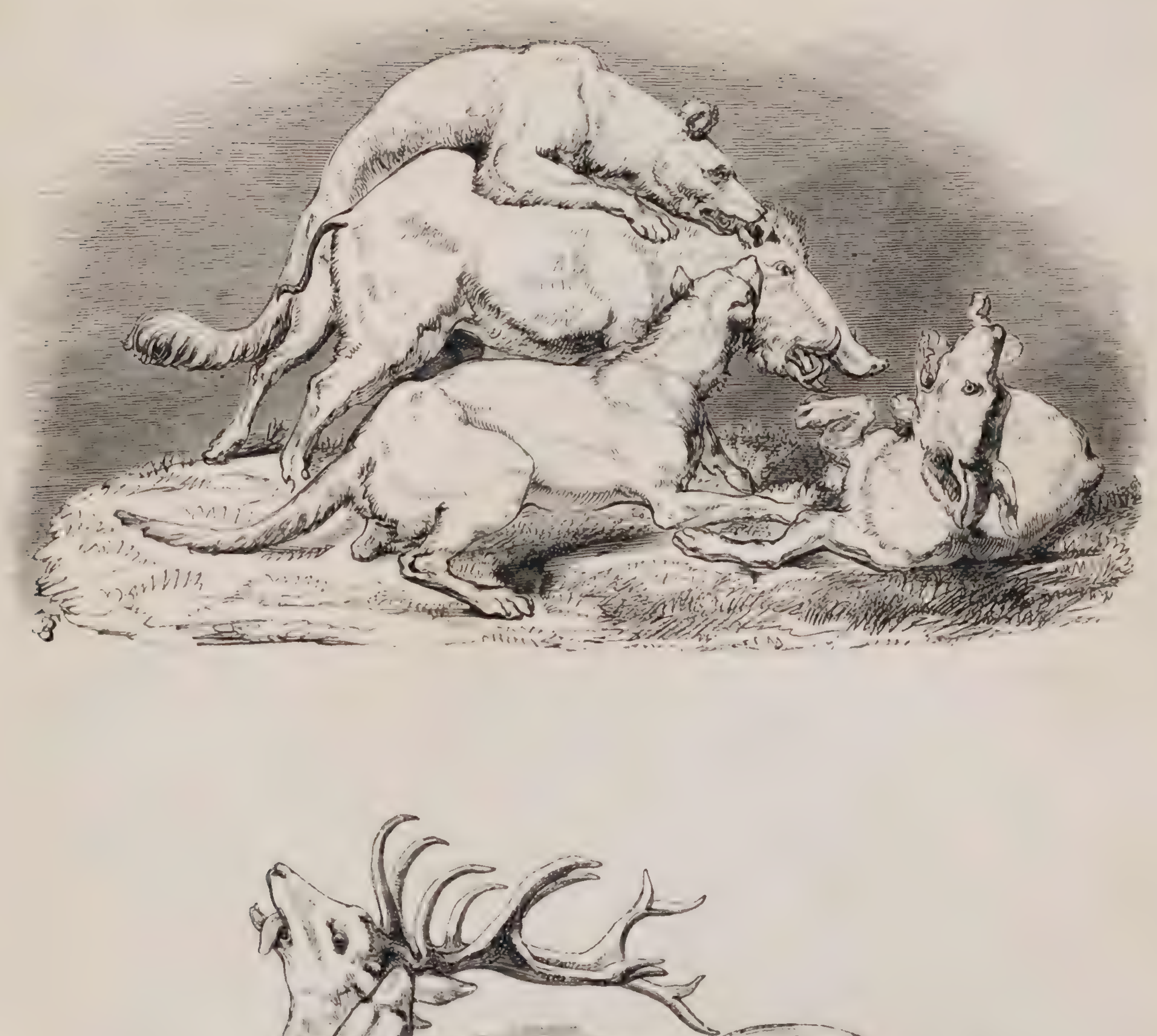
109 Wetzel, C. J., *Stuttgart*—Inventor, Designer, and Producer.

Glass paintings—"Prophecy of the Destruction of Jerusalem," after Begas. "Esther asking Ahasuerus for grace for her people." "Virgin Mother," after Murillo

110 Boelstler, T., *Eisbach*.

Machine for cutting bread, adapted for large establishments.



220. GROUPS OF STUFFED ANIMALS. BOAR BAITING AND STAG HUNT. M. H. PLOUCQUET. STUTTGART, WURTEMBURG.

FRANKFORT

Commissioner, M. Philipp Ellissen.

The collection brought over from this State includes articles in most of the Classes of the Exhibition. The number of exhibitors is thirty-three. The specimens of chemical preparations, illustrative of the raw materials and produce, are creosote, distilled oil, and a new alkaloid which may probably become of ultimate value to the medical practitioner. Among mechanical objects are models of apparatus for the use of the blind, a large key of complicated workmanship, &c. Various philosophical instruments are also shown, which include a daguerreotype apparatus, with a double achromatic lens of five inches diameter, polarization of light apparatus, &c. The specimens of ornamental glass are extremely beautiful, and include objects of considerable size. Several exhibitors have sent objects of a miscellaneous character; and among those of the fine arts are specimens of ivory-carving, models of statues, photography, &c.—R. E.

1 Broenner, Francis J., *Frankfort-on-the Maine*—Manufacturer.

Creosote, pure, and refracting light powerfully. Pamphlet, containing specimens of printing inks.

2 Busch, Peter A., *Frankfort-on-the-Maine*—Producer and Proprietor.

Rectified "cognac oil," manufactured out of common gin, or thinned spirits.

3 Zimmer, Dr. Conrad—Manufacturer. (Agent, F. W. Roller & Co., 15 Union Court, Old Broad Street, London.)

Pure crystallized chinidine.

[The sulphate of this alkaloid is generally united with the sulphate of quinine, manufactured from the ordinary kinds of yellow bark; but it is only lately that it has been produced separately as a salt, and its properties ascertained.

Experiments made up to the present time with the sulphate of chinidine are considered to show that it is as powerful in its effects as the sulphate of quinine. This, added to the fact of its being obtainable from the cheaper kinds of the yellow bark, which are not limited to the district of Bolivia, justify the opinion that the sulphate of chinidine may take an important place amongst medicinal substances.—R. E.]

4 Minoprio & Co., *Frankfort-on-the-Maine*—Manufacturer.

Samples of snuff, viz.:—
Paris rappee. Dutch rappee.
Marino Marocco, coarse and fine.

5 Barthel, John Charles, *Frankfort-on-the-Maine*—Inventor.

Models of apparatus for the use of the blind: viz.—

Apparatus to facilitate the twisting of straw or rope.

Apparatus to moisten straw to be used for twisting straw carpets and straw mats. They both require but a small space, and untwisting is prevented, which will be of great advantage, particularly for the blind.

Improved apparatus for making straw and list carpets.

Lace apparatus and a chair for the blind. The former is used in making round lace, clock ropes, &c., and the latter contains various working springs.

Apparatus for making square, round, and half-round tow mats, constructed for the blind; the drawing of tow mats is engraved in a peculiar manner between the holes of the board.

Apparatus for tarring tow mats; the same board can be used for various kinds by making a different use of the holes.

Articles manufactured by the blind, under the direction of the exhibitor: straw carpet, tow mat, list carpet, lace cords.

6 Weber & Schultheis, *Frankfort-on-the-Maine*—Producers.

Single and double-barrelled rifles.

7 Albert, J. W., *Frankfort-on-the-Maine*—Manufacturer. (Agents, Tootal and Browne, Piccadilly, and 11 Bond Place, London.

Daguerreotype apparatus, with double achromatic lenses of 5½ inches in diameter; with specimens produced by it.

8 Meyer & Schwarze, *Frankfort-on-the-Maine*—Manufacturers.

Specimen of coloured cotton and woollen yarn.

9 **Roth, C. W.**—Manufacturer.

Enamelled, waxed, and brown calf skins.

10 **Roth, J. A., & Sons**, *Frankfort-on-the-Maine*—Manufacturers.

Calf-skins, black on one side, brown, and varnished.

11 **Rupp & Bechstein**, *Frankfort-on-the-Maine*—Producers.

Six black varnished calf-skins, soft and pliable.

12 **Baldenecker, J. B.**, jun., *Frankfort-on-the-Maine*—Manufacturer.

Various samples of ink for copper-plate and other printing.

13 **Krebs, Benjamin**, and **Bauer, J. C.**—Producers and Proprietors.

Specimens of letter-press printing. The German-text types, are cut after the concordance system (proportional size of letters), extensively introduced into Germany. By this process the kerning of the overhanging parts is obviated, and the type when cast occupies only the body of the letters. Roman and italic of a novel and superior style.

14 **Wuest, Caspar Ludwig**, *Frankfort-on-the-Maine*—Inventor.

Playing cards of various kinds.

15 **Vaconius, Johann Joseph**, *Frankfort-on-the-Maine*—Manufacturer.

Sofa carpets, with border.

16 **Hoffman, G. J., & Son**, *Frankfort-on-the-Maine.*

Porcelain stove intended to combine the comforts of an open fire with the usual advantages of a stove.

This stove is represented in the illustration on the next page.

17 **Junge & Walther**, *Frankfort-on-the-Maine.*

Gilt lustre in bronze for 32 lights, in the Grecian style

18 **Raab, G. A. B.**, *Frankfort-on-the-Maine*—Producer. (Agent Mr. J. Kellermann, 13 Broad Street Buildings.)

Great key, exhibited for fine and difficult workmanship. Iron safe.

19 **Zimmermann, Ernest George**, *Frankfort-on-the Maine*—Manufacturer. (Agent in London, F. Kellermann, 94 London Wall.)

Sundry articles in zinc and iron. Ash cases. Match-stand. Card racks. Screen. Screen, with candlestick. Ink-stands. Jewel-case. Thermometers, encased in iron. Looking-glasses. Flower-stand. Card-trays. Pen and cigar holders. Watch and tobacco cases. Candlesticks, branched and flat. Match cases. Paper weight. Bronze cup. Night-lamp. Night-lamp, with watch. Iron wire work. Transparent plate. Watch, with white and red dials. Flower-pots. Iron and zinc castings of various groups of animals and birds, &c.

20 **Goldschmidt, Moritz, & Son**, *Frankfort-on-the-Maine*—Manufacturers.

A lady's jewel-box, containing bracelet, brooch, watch-hook, a pair of earrings, and chains of gold. Green enamel with diamonds.

21 **Tacchis, P. A., & Co.**, *Frankfort-on-the-Maine.* (Agents, J. & R. M'Craken, Old Jewry.)

A large fountain of alabaster crystal, with tubes, shells, and a carcel lamp, with gilt bronze ornaments, and arrangements for the more effective conducting the water, for dining rooms and conservatories. The fountain is represented in the engraving on the next page.

Vases, on pedestals of alabaster glass, with gold decoration, Grecian style.

Vases of green (*chrysoprase*) glass, gold decoration, Grecian style.

22 **Vogelsang, J., & Sons**, *Frankfort-on-the-Maine*—Inventors and Manufacturers.

Glass wares, coloured, cut, and gilt, viz.:—Flower and candelabra ornaments; pink glass plated with layers of alabaster, cut and gilt.

Vases on pedestal, in alabaster glass, with chrysoprase frosted handles in form of dragons, forming one piece with the body of the vase; alabaster, with sapphire blue twisted snake handles, enamelled; flint-glass, plated with enamel, cut and painted; turquoise, plated with enamel, cut flowers and arabesques, gilt; double plated with enamel and sapphire blue, black etched pattern, and gilt; alabaster, with chrysoprase frosted figures and body; crystal, with sapphire blue plated and cut palm border, pink and sapphire blue snakes, and pink body; and alabaster, with turquoise border and snake, enamelled.

Hock bottle, wine glass, and champagne glass, in crystal, cut with ruby Gothic pattern and spiral engravings. Wine glass, crystal, cut with ruby Gothic pattern and spiral gold leaves.

Vases, crystal plated with enamel and sapphire blue, cut and enamelled in colours.

Tazzas, pink plated with enamel, with pink snake, cut and gilt. Vases, crystal, cut, with ruby middle and ruby stones, gilt. Magnum candle lamps, chrysoprase plated with enamel, cut and gilt. Scent bottles, crystal, cut, ruby stones, and gilt; and crystal plated with enamel, with pink snake, gilt.

Large chalice, with ruby cover, engraved.

23 **Albert, J. V.**, jun., *Frankfort-on-the-Maine*—Manufacturer. (Agent, A. Pritchard, 163 Fleet Street.)

Moor's head conjuring toy, and German dolls. Specimens of artificial glass eyes, for birds, animals, &c. Reliefs cut in stag's horn, in the manner of cameo.

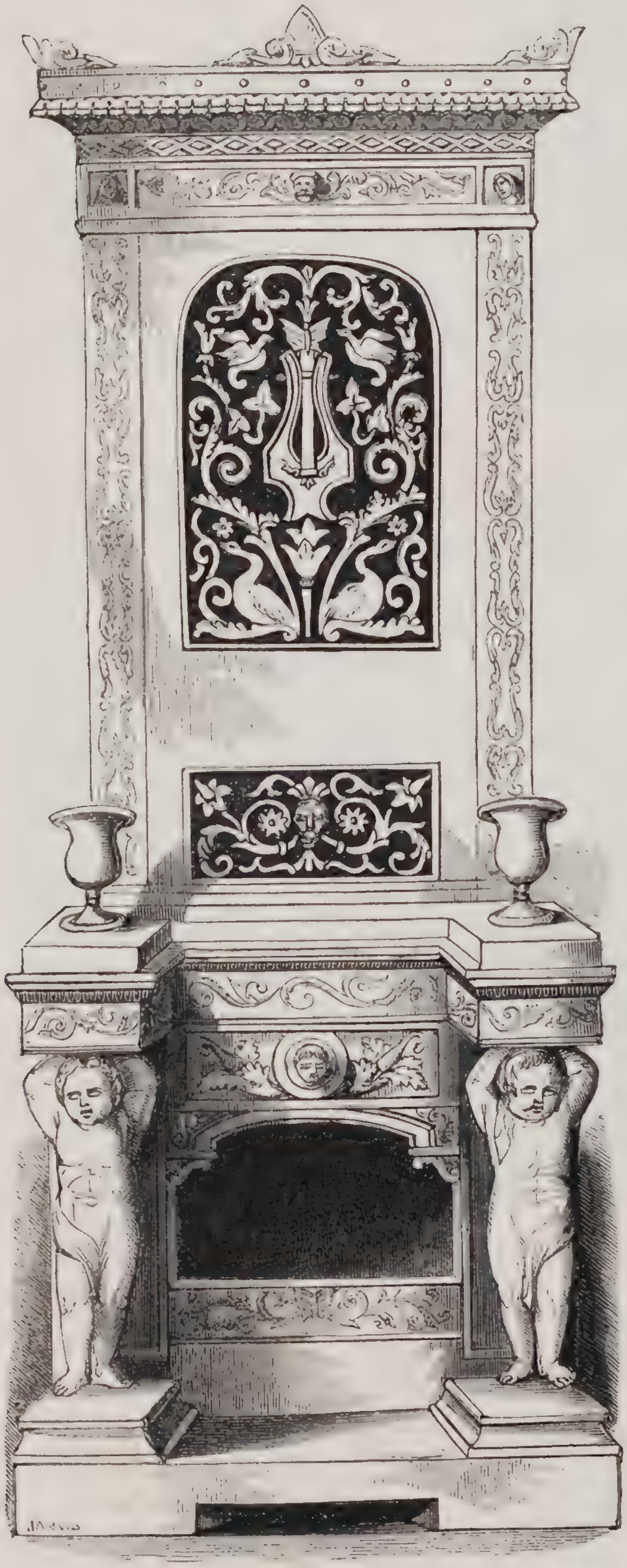
Optical objects for the polarization of light:—Large plate of tourmaline. Large prism of nickel. Achromatic prism of rock crystal. Discs of rock crystal and dark quartz. Discs of topaz, diopsid, and tourmaline.

[If a beam of light be allowed to fall upon a plate of glass at the angle of 56°, it separates into two rays or beams, with different properties on different sides. If we suppose another plate of glass to be placed over the former, the reflected rays will pass through it when in some positions, and not in others; if the glass be turned through an angle of 90°, the light will be reflected in one quadrant, transmitted in a second, and so alternately till the circle be completed; that is, in two quadrants it is reflected, and in the other two it is refracted, and hence it is said to be polarized; but, as we know nothing of the poles, this must be considered as a conventional term, to avoid repeating the conditions by which it is produced. The objects exhibited are well known to philosophers from their polarising effect upon the rays of light transmitted through them.—J. G.]

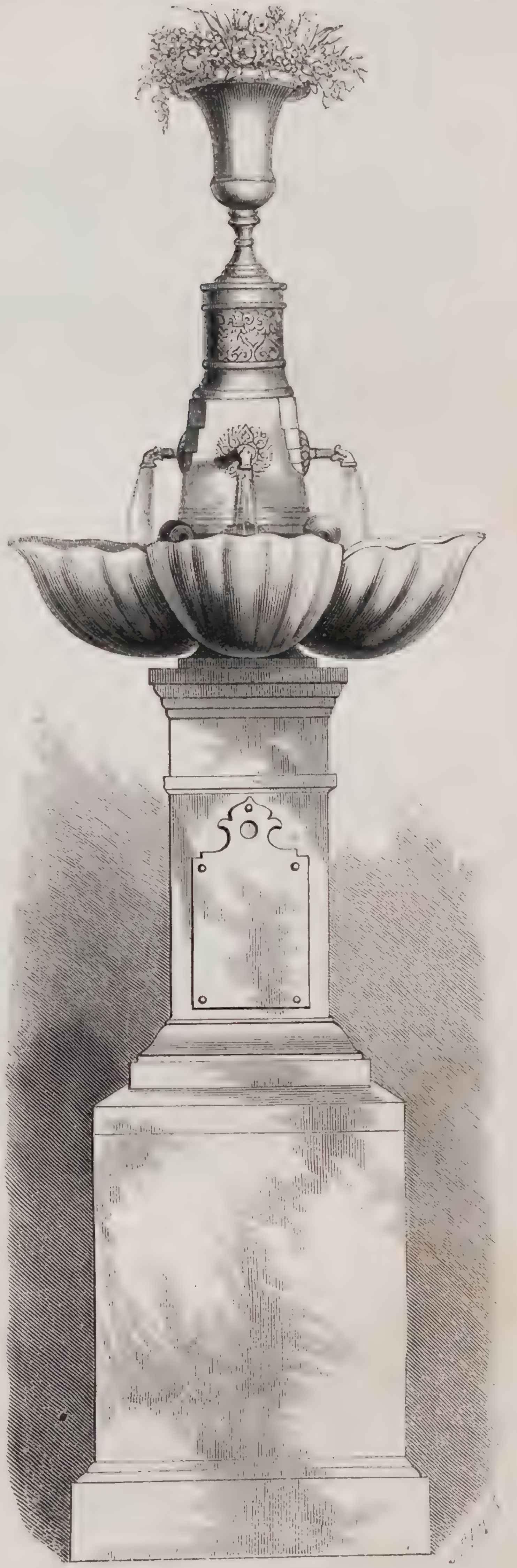
Fourteen models in crystal of precious stones. German hard glass chemical apparatus. Thermometers; register and others. Phenakisticope, after Professor John Müller, for explaining the theory of vibrations—latest improvements, with portfolio of drawings. Stereoscope, with new and interesting drawings after Professor F. M. Hessemer. Portfolio of drawings.

24 **Dresler, Frederic**, *Frankfort-on-the-Maine*—Inventor and Manufacturer. (Agents in London, G. Duples, Idol Lane; and J. Kellermann, 13 Broad Street Buildings.)

Specimens of types of the German, Gothic, English, French, Russian, and Hebrew languages; ornaments, borders, &c. Matrices of the types.



Hoffman's Porcelain Stove.



Tacchis' Alabaster Crystal Fountain.

Types and ornaments of a new metallic composition, used by bookbinders.

25 Ehr, N., *Frankfort-on-the-Maine*—Manufacturer.

Three furniture-brushes. Hair brushes.

26 Gouda, Paul Franz, *Frankfort-on-the-Maine, and 11 Queen Street, London*—Manufacturer.

Work-boxes, with bronze plates. Double tea-caddy. Work-box, with painted plate. Knitting box, with tray; with bronze plate; and with steel plate. Work-box, with the same. Knitting-boxes. Ink-stands. Ladies' desks, envelope, work, and knitting-boxes, with trays.

27 Koehler, Johann, *Frankfort-on-the-Maine*—Producer.

Tea-caddy, made of wood in imitation of German needlework, in mosaics.

28 Wohlfahrth, J. E. sen., *Frankfort-on-the-Maine*—Manufacturer.

Show card. Writing desk. Diary. Ruled paper.

29 Delkeskamp, Frederik William, *Frankfort-on-the-Maine.*

Picturesque relief, a scene in Switzerland.

Picturesque relief of the Swiss Alps and their boundaries. Incomplete specimens.

30 Schmerber, S., *Frankfort-on-the-Maine*—Bookseller.

Works and objects of the middle ages and renaissance, by C. Becker and S. von Hefner.

Gothic A B C, or rules of the Gothic styles for artists and artisans, by Fred. Hoffstadt.

Memorials of Roman architecture on the Rhine, by Geier and Gortz, Nos. 1 to 4.

31 Vanni, Antonio, *Frankfort-on-the-Maine*—Producer.

Group, in ivory, Ariadne on a pedestal.

32 Kress, George Lewis Von, *Offenbach, near Frankfort-on-the-Maine*—Producer.

Small statue of the poet G. E. Lessing, produced by electrotype process.

The model is by Professor E. Rietschel, sculptor, Dresden. Bas-relief, "Cupid upon a panther," electrotype.

Model by E. Rietschel. Crab, lizard, snake, &c., modelled from nature.

33 Strauch, Frederik—Producer.

Specimens of plain and coloured photography.

HESSE DARMSTADT

Commissioner, M. Hector Roessler, 23 *Southampton Street, Strand.*

The productions of this State exhibited are the united contribution of about eighty exhibitors. Proportionately to the number exhibiting, the objects included under raw materials are more numerous than in several other instances of the collections of Foreign States. Some of these are of high interest, particularly those sent from Salshausen and Kreuznach. The agricultural products forwarded by the Central Board of Agriculture with the implements have a peculiar value and interest, as the practical representatives of the fruit of the soil and of the instrumental means employed in its production. The chemical products are also valuable—such as those exhibiting the production of sugar, dextrine, &c., from the starch of the potato. Musical instruments and some philosophical apparatus will also be found among those articles. The linen manufacture is represented by a few exhibitors of towelling, table-cloths, &c. A more important manufacture to this State, that of leather, has nine or ten exhibitors. Miscellaneous and fancy wares, often so largely contributing to the export commerce of Foreign States, are adequately represented here. In the fine arts are some elaborate specimens of carving, and specimens of careful plate-printing, exhibited to illustrate the necessity for discretion on the part of the printer in developing the effects intended by the artist and engraver.—R. E.

1 Buechner, Wilhelm, *Pfungstadt, near Darmstadt*—Manufacturer.

Specimens of ultramarine:—The peculiarities are their lightness and impalpability, so that, with some exceptions, they can be employed in the glazing of cotton and paper, with the agate-stone, without requiring the use of the brush.

[Ultramarine, the "sapheiros" of Theophrastus, was employed at an early period in painting. Theophrastus also places "cyanus," which was the blue Armenian stone, among the colours used by painters: this latter is coloured by the bicarbonate of copper, and is not so permanent as that produced from the true "lazulite"—the ultramarine. Lazulite is found in Great Bocharia and in China; it is acted upon by the acids, but is unchanged by the test of fire, which destroys the carbonates of copper. Venice monopolized the preparation of ultramarine for a long period.—R. He.]

2 Rosenberg & Co., *Giessen*—Proprietor.

Specimens of manganese ore, exhibiting a very perfect crystalline structure, and yielding, on an average of four analyses, as much as 96·45 per cent. peroxide of manganese. Found near Battenberg, near Giessen.

[Manganese is obtained in Europe exclusively from the peroxide with or without water. This occurs in various places, and is very abundant. Pyrolusite, the crystalline variety, contains very little water, and gives off 10 to 11 per cent. of oxygen at a red heat. It is generally massive, but not unfrequently distinct crystals occur.—D. T. A.]

3 Salt and Lignite Works, *Salzhausen.*

Raw products:—Earthy lignite, employed in the manufacture of salt; bituminous wood, employed in the manufacture of dressing cases, &c.; and leaf lignite.

Principal articles of manufacture:—Lignite blocks (*Braunkohlenklœtze*), prepared from the smaller particles, also used as a combustible, in another stage of the manufacture of salt; common salt; salt for manure (*Dungsalz*), produced from the remains of the boiling and refining of the salt; salt scum (*Salzschaum*), taken from the upper surface of the salt-pans, and mixed with the unconsumed portion of the sediment, also a powerful manure; lignite ash, used in the improvement of damp meadows and heavy ground.

[Dr. Braund, the Professor of Botany at Giessen, has discovered lately, in the lignite of Salzhausen, seeds and leaves of the vine (*Vitis vinifera*).—*Justus Liebig.*]

4 Briel, W. & Co., *Giessen*—Proprietor.

Specimens of manganese ore.

5 Salt Works, *Theodorshalle, near Kreuznach.*

Salt crystals, remarkable for their size:—Bottle of concentrated mother-ley (*Mutterlauge*).

The salt for culinary purposes is produced from a spring, entirely free from sulphate of lime, which rises from the porphyritic hills on the river Nahe, a stream which enters the Rhine near the town of Bingen.

The mother-ley (a concentrated fluid which remains in the salt-pans after the separation of the salt) contains, with a specific gravity of 1·3176, in 100 parts;—

Chloride of sodium	0·389
Bromide and iodide of sodium	0·689
Chloride of potassium	2·383
Chloride of calcium	25·703
Chloride of magnesium	3·758
Water	67·068

The mother-ley, on account of the considerable quantities of bromine, iodine, and chloride of calcium which it contains, is employed efficaciously for baths.

[The manufacture of salt from brine springs is conducted in nearly the same manner in many parts of the Continent; and as one very large establishment exists near Kreuznach, some account of the process may find place here.

Brine springs are seldom saturated or sufficiently strong to render it economical to evaporate them at once, as even in favourable cases the quantity of salt is less than one-tenth that of the water, and sometimes not more than one per cent. The natural brine is therefore pumped to a canal at the top of a building, whence it is allowed to descend slowly over a vast wall of faggots 30 to 40 feet high, 6 to 10 feet thick, and 1,200 to 1,500 feet long, exposed on the side of the prevailing winds. Descending slowly through these faggots, a large quantity of the water is evaporated, and the remainder is repumped as a much stronger brine to another similar wall; and so on four or five times over, until the quantity of salt is 16 to 20 per cent. The evaporation is then completed by the aid of fuel.—D. T. A.]

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6 JONGHAUS & VENATOR, *Bauerkeller's Prægananstalt, Darmstadt*—Manufacturers.

Maps in relief and maps printed in colours:—Geological map in relief of the grand duchy and electorate of Hesse, with the duchy of Nassau and neighbouring countries, tinted in 27 colours, upon a scale of 1 in 900,000 horizontally, and 1 in 90,000 vertically; by L. Ewald, secretary of the Geographical Society of Darmstadt. This map extends from Muenster to Anspach, and from Brunswick to Zweibrücken (Deux-ponts), and contains, besides the mountains in the above-named countries, the greater portion of the Hartz, the Thuringerwald, the Haardt mountains, the Hundsruck and the Eifel, the Teutoburgerwald, and the Weser mountains.

Geological map, in relief, of Wurtemberg, Baden, and the neighbouring countries, including the Palatinate and Alsatia, tinted in 30 colours, by L. Ewald; upon the same scale as the preceding map. This map contains the Odenwald, the Black Forest, the Hundsruck, the German portion of the Jura (Rauhe Alp), and the Swabian table-land.

Bauerkeller's Hand-atlas, embracing the principles of universal geography, in 80 maps, a physical description of the surface of the globe, and various statistical tables and topographical indices, by L. Ewald. Of this atlas the half, or forty maps, printed in colours, have already appeared, two in illustration of the mathematical, three of the physical, nine of the topical, and twenty-six of the statistical and topographical departments of the work, with a corresponding portion of letter-press.

[We owe to the Germans the first introduction of, and subsequent improvements in, the art of embossing paper, so as to present in relief, by the process of printing, any required series of lines and marks. Such a process seems well adapted to the purpose of exhibiting roughly some of the more prominent physical features of a country in a striking way to the student. More than this can, however, hardly be expected; but for educational objects this ought not to be neglected. Bauerkeller's maps of Switzerland and of Europe have for some time been known in England. —D. T. A.]

7 KOCH, F., *Oppenheim*—Manufacturer.

Alkaloids, from Peruvian bark; for medicinal purposes, especially in agues.

[The alkaloids to which Peruvian bark owes its medicinal properties are principally cinchonia and quina. The latter, in combination with sulphuric acid, is the ordinary quinine of the shops. These alkaloids are intensely bitter, and the latter especially has proved one of the most valued therapeutic agents in the hands of the physician. Quinine is popularly considered a specific in intermittent diseases, and is unquestionably of great though not infallible service in such disorders.—R. E.]

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8 OEHLER, CARL, *Offenbach*—Manufacturer.

Samples of chemically pure creosote, crystallized creosote, coal, naphtha, resin, lamp black, Paris black for copper-plate and lithographic printers, and for dyeing Spanish leather; pure crystallized sal ammoniac.

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9 BERNARD BROTHERS, *Offenbach*—Manufacturers.

Samples of snuff.

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10 MEYER & LINDT, *Sprendlingen, near Frankfort-on-the Maine*—Manufacturers.

Samples of the finest wheat flour, meal groats, and rye flour.

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11 MUELLER, J. P., *Offenbach*—Manufacturer.

Specimens of tobacco and cigars.

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12 ZAHN & VOLBRECHT, *Ruesselsheim, near Mentz*—Manufacturers.

Samples of chicoré, or German coffee.

[The botanical name of chicoree is *Cichorium intybus.* It is imported in large quantities into Great Britain, being used to an enormous extent in the adulteration of coffee. It is cultivated largely in Germany and the Netherlands. The tap-root is the part of the plant which is used. It is cut in pieces, dried, partially torrefied, and then used alone, or mixed with coffee for preparing beverage. It is also cultivated largely in Britain—to the extent of perhaps 3,000 or 4,000 tons annually.—R. E.]

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13 The CENTRAL BOARD of AGRICULTURE for the GRAND DUCHY of HESSE, *Darmstadt.*

Samples of agricultural products:—Gommer, a very favourite and wholesome article, much used in the neighbourhood in the preparation of soups; manufactured from black amel wheat (*Triticum amyleum*), which, for this purpose, is deprived of its skin by mill-stones.

Oak bark, used in the tanning of sole leather, from the *Quercus pedunculata*, mixed with *Quercus sessiliflora* 15-year shoots, from the extensive oak forests near Hirschhorn, on the Neckar.

Tobacco leaves (*Deckblätter*), from Lorsch and Virnheim near Mannheim, grown upon a light sandy soil.

[The seeds of *Pinus pinea* (the stone pine) are commonly sold in foreign markets as an article of dessert. They taste somewhat like hazel nuts.—J. L.]

Models of agricultural implements, &c.:—The improved plough by Bergstrasser. The form of the coulter and of the stilts of the well-known Flanders plough is retained, both, however, united in one; and upon that part of the coulter which is most subject to wear, a plate, acting as a carpenter's plane, is affixed by a screw, so that the plough rests solely upon this plate and upon the heel, and therefore requires less power than other ploughs with narrow soles.

The Braunfels potato mill, for brandy distilleries; crushing the potato with scarcely any manual assistance, and reducing it to the finest pulp. Comparative trials with cylinders of wood and stone have shown the superiority of this machine, in the quantity of brandy produced. Upwards of two tons of potatoes may be reduced to a complete pulp, by this machine, in one hour.

Sluices of wood and stone, for irrigation.

14 Hofmann, George Wilhelm, *Ingenheim, near Darmstadt*—Manufacturer.

Specimens of starch from potatoes, used as weavers' glue for cotton warps, and for dressing printed calicoes.

Dextrine, two sorts: Gomelin in crystals, and in powder. Glucose, used instead of gum-arabic for dressing, weaving, and in printing wools, cottons, or silks. Also advantageously employed by paper-stainers, and for stiffening gauzes, glazing of paper, &c.

Syrup of starch (*Traubenzucker*), employed in the manufacture of beer and vinegar. The usual proportion is half of this sugar and half malt.

White and brown sago.

Starch from wheat (*Waitzenstärke*), of four varieties.

[Dextrine is the chemical name of starch after it has been exposed to a temperature of 400° Fahrenheit. Starch may be very readily converted into sugar (*grape-sugar*) by boiling it for several hours in diluted sulphuric acid and water. The acid may afterwards be separated from it by neutralizing with chalk, and the solution in evaporation yields a quantity of grape-sugar rather exceeding in weight the quantity of starch employed. It is extensively used in some parts of the Continent, where sugar from the sugar-cane is not readily obtained.—R. E.]

15 Appel, Carl, *Griesheim, near Darmstadt.*

Various sorts of forest, grass, and clover seeds.

16 Michel & Morell, *Mayence*—Manufacturers.

Black for copper-plate printing of different sorts, prepared from the best wine-lees finely ground, easily worked and producing a durable hue.

Lamp-black, best calcined, in lumps, used for lithography, of the deepest hue, easily worked and destitute of resin; from pine calcined, drying quickly, used for varnishing fine soft calf; and another sort useful for the preparation of printing black.

Varnish-black and real ivory black, finely ground; darkest black varnishing colour, to be used with oil.

Paste black, dissolved in liquid; vivid black, for paper-hangings, &c.

Paris black, a varnish black, that can be applied with oil.

Black for blacking, Frankfort black, &c.

[The whole of the compounds described contain essentially the same colouring matter—carbon, in different molecular conditions. There is, however, a marked difference in their appearance to the eye; and the practised artizan detects various degrees of excellence unappreciable to others. The Frankfort black, which is prepared from the charred husks and residue of the wine process, is distinguished by the peculiar velvety lustre of impressions taken with it. The notes of the Bank of England are printed with this black, which affords one test of their genuineness —R. E.]

17 Dick & Kirschten, *Offenbach*—Manufacturers.

Phaeton, built chiefly of iron, for one or two horses, and patterns of three different axletrees.

18 Dickore, A., *Giessen*—Gun-maker.

Rifle, four feet ten inches long, inlaid with gold and silver. The stock of walnut-wood is carved and ornamented with carvings in ivory of several hunting subjects, together with mould, measure for powder, and screw ramrod. The sight is connected with a micrometer, by which the aim, at the usual rifle target at 120 paces, is rendered more certain.

19 Schuchard, H., *Darmstadt*—Manufacturer.

Several patterns of hats, cocked and round from felt, or hare skin; silk hats with felt foundation; hat (and feather) of beaver and musk; glazed hats in their original colour, &c.

Two officers' helmets, one being made out of a single flat piece of leather without seam; and the other, helmet and peak both of one piece of leather, the seam being under the brass behind.

20 Kuehnst, Gottlieb, *Darmstadt*—Manufacturer.

Mahogany grand piano-forte of 6½ octaves, with peculiar action.

21 Maury, J. C., *Offenbach*—Manufacturer.

Various helmets, military and other caps in japanned felt and leather. Fire-buckets from one piece.

22 Huch, H. C., *Mentz*—Manufacturer.

Levelling instrument, with case and stand, furnished with an achromatic telescope, with an object-glass of above 1 inch diameter, and horizontal micrometer movement. It is intended for the use of architects, engineers, agriculturists, &c., and for laying down railroads and highways.

23 Klein, C., *Mentz*—Manufacturer.

Alt vono, a small brass instrument, and an E flat clarionet, both with German silver keys; F clarionet; B clarionet; B cornetto, entirely of German silver.

[Clarionets are named according as they are pitched; and the three most generally used are the C, B flat, and A, each as they stand being a note higher than the last, *i. e.*, a note which the C clarionet would sound as *C*, a B flat clarionet would sound *D*, and the A clarionet *E flat*. There are small shrill clarionets in military use called E flat and F. The various clarionets are used for different keys, one executing with facility what in another is found difficult.—H. E. D.]

24 Mueller, C. A., *Mentz*—Manufacturer.

Brass cornet à piston.

25 Schotts, B., & Sons, *Mentz*—Manufacturers.

Semigrand pianoforte in zebra wood, 6¾ octaves.

26 Seidel, Joseph, *Mentz*—Manufacturer.

Clarionets of boxwood, mounted with ivory, brass keys; flutes and piccolo of the same materials.

27 Arzt, P. L., *Michelstadt*—Manufacturer.

Specimens of green and mulberry woollen cloth, buckskin, &c.

28 Mœrschel, Winzenried, & Co., *Herrenhaag, near Búdingen*—Manufacturers.

An assortment of crochet woollen work (*Häkel-oder Strumpfwaaren*), including worsted gloves, &c.

29 Lohn, Steward of the Hospital of Schlitz, *near Fulda*—Manufacturer.

Towels of different damask patterns, and damask table-cloths, with napkins, the whole from hand-spun flax, and grass bleached, from the manufactory of the exhibitor.

30 Struth, V., sen., *Lauterbach*—Manufacturer.

Table-cloth and napkins, from flax yarn, spun by hand and grass bleached.

31 Ihm, Boehm & Pfaltz, *Offenbach*—Manufacturers.

Specimens of japanned leathers.

32 Heyl, C., *Worms*—Manufacturers.

Black japanned leather for shoes and boots. The leather has a deep gloss, and remains pliant to the last.

33 Doerr & Reinhardt, *Worms*—Manufacturers.

Japanned and enamelled calf-skins, the former exclusively employed by shoemakers, and the latter in the manufacture of furniture.

34 Hellmann, J., *Neckarsteinach*—Inventor and Manufacturer.

Patterns of leather for soles. This leather is said to be prepared by a process different from any in use in England, France, and North America. The patterns exhibited were prepared from a German hide.

35 Mayer, Paul, *Mentz*—Manufacturer.

Patterns of manufactured leather. Half-brown hide, half-bridle hide, brown calf-skin, waxed calf-skin, and several boot-legs and fore-shoes, manufactured from calf and horse hides.

36 Mayer, Michel & Deninger, *Mentz*—Manufacturers.

Japanned and enamelled hides, black and in various colours, for saddle and coach work. Dyed calf-skins, moroccos (goat-skins), roans (sheep-skins unsplit), and split sheep-skins, dyed in different colours for bookbinding furniture, boot and shoe-making, hatters, coach-builders, &c.

Black japanned calf-skins (patent calf), enamelled goat and calf skins, black and coloured, for boot and shoe work.

Japanned calf (stout), for coach and harness-makers, hog-skins, harness hides, hides for bridles, stirrups, and saddles, and other hides and skins for various uses.

37 Minoprio & Hohwiesner, *Bingen* — Manufacturers. (Agent, F. Kellermann, 94 London Wall, City).

Black japanned calf-skins; calf-skins with the hair, for coach-makers, for trunk-makers, and heifer-skin (*Raupenfell*), for saddlers.

Sheet nettle-cloth (*Nesselstoff*), japanned in three colours, black, green, and yellow.

Pair of boots of japanned calf-leather. Pair of shoes with the hair on the inside. The employment of japanned leather, with the hair upon the inside of the skin, for boots and shoes, is intended to preserve the feet against wet and cold.

[The new material called "nettle-cloth" consists of a very thick tissued cotton, so prepared as to become durable and compact, and it is stated that it may be substituted for leather, particularly for the peaks of caps and waistbands, and at a smaller cost. It can be manufactured of various degrees of strength.]

38 Freund, E. A., *Offenbach*—Manufacturer.

Specimens of ornamental labels, embossed and enamelled cards and paper.

39 Frommann, M., *Darmstadt*—Manufacturer.

Specimens of playing cards of various sorts.

40 Reuter, W., *Darmstadt*—Manufacturer.

An assortment of various descriptions and qualities of playing cards.

41 Petri, Joh., *Mentz*—Manufacturer.

Specimens of black for copperplate printers.

42 Schnapper, H. L., *Offenbach*—Manufacturer.

Various specimens of playing cards.

43 Weber, J. B., *Offenbach*—Manufacturer.

Specimens of coloured and marbled papers.

44 Wuest Brothers, *Darmstadt*—Manufacturers.

Patterns of coloured and marbled papers.

45 Kern, Heinr., *Mentz*—Manufacturer.

Various articles, ornamented with embroidery upon canvas.

46 Ihm, Ferd., *Offenbach*—Manufacturer. (Agents, J. A. Hoffmann & Co., 18 Laurence Lane.)

Several specimens of printed and painted oil-cloths for table covers, pianos, and the interior of railway carriages. Entire pieces of waxed oil-cloths.

47 Schumacher, Jos., & Son, *Mentz*—Shoemakers.

Assortment of shoes, boots, slippers, &c.

48 Werner, M., *Mentz*—Shoemaker.

Assortment of gentlemen's boots.

49 Reis, G., & Co., *Mentz*—Manufacturers.

Camphine lamps, and improved camphine.

[Camphine, as it is commercially denominated, is a redistilled spirit of turpentine, freed by that process from resinous matter, and thus fitted for combustion. It is used in lamps of a peculiar description, in the arrangement of which a rapid current of air and an extreme thinning out of the flame are absolute requisites to its perfect action. If these are not attended to, the odour of the lamp becomes extremely offensive, from a part of the vapour escaping combustion.—R. E.]

50 Seebass, A. R., *Offenbach*—Manufacturers.

Assortment of fine cast-iron articles, black varnished and bronzed, viz.—inkstands; night clocks and night lamps, with figures in relief; candelabra, with figures; table and hand candle-sticks; candle-shades; fruit-dishes, &c.; cigar and watch stands, with figures, and other descriptions of useful ornaments.

51 Schreger, B., *Darmstadt*—Manufacturer.

Articles of jewellery, manufactured in oxidized silver, with solid gold ornaments. Paper weights; bracelets; brooches; Albert chains; ring and bridge chains; breast pins; ornament for a walking stick, with horses; match case.

52 Wagner, Joh., *Mentz*—Manufacturer.

Patterns of mock-pearl and other beads (*Glas-und Wachsperlen*), in all colours, and several ornamental objects in beads.

53 Buettner, P., *Darmstadt*—Manufacturer.

Oval looking-glass in gilt frame, the ornaments in composition; toilet-glass; the same, in velvet and gilt frame.

54 Reinhardt, J. M., *Mentz*—Manufacturer.

Various patterns of straw chairs with walnut-tree wood frames.

55 Wenderlein, J. H., *Darmstadt*—Manufacturer.

Several gilt picture frames, and an assortment of frame patterns in the Gothic and renaissance styles.

56 Andre Brothers, *Hirschhorn, near Heidbelberg*—Manufacturer.

Patterns of walnut-tree veneers, from wood of the Odenwald.

57 Gick, J. G., *Mentz*—Manufacturer.

An assortment of basket-work, in rushes, straw, cane, feathers, &c.

58 Schmidt, Ernst, *Darmstadt*—Manufacturer.

Spun coat and waistcoat buttons, made by hand.

59 Anselm, F. C., *Offenbach*—Manufacturer.

Specimens of purses, gold and silver lace, bullion, &c.

LUXEMBOURG

The productions of six exhibitors are combined in this collection. The articles thus included comprise specimens of cloth, paper-hangings, leather in the form of boots, shoes, gloves, &c. Mineral manufacture and hardware. Attention is claimed among these by the specimens of mosaic pavement made with small bricks of different colours; this kind of pavement being in extensive use in several places on the Continent.—R. E.

1 **Godschaux Brothers**, *Schleifmühl, near Luxemburg*—Manufacturers.

Specimens of buckskins and lamas cloth.

2 **Lamort, Jacques**, *Luxemburg*—Manufacturer.

An assortment of paper-hangings, variously coloured and gilded, satin and embossed.

3 **Wemmer, F.**, *Luxemburg*—Manufacturer.

Hunting boots. Shoes and boots, with single and double soles.

4 **L'Union (De) Ganterie Française**, *Luxemburg*—Manufacturer.

Kid and lambskin gloves, forladies and gentlemen. White and coloured kid and lambskins. Gold, bronzed, and black glazed kidskins.

5 **Boch, J. F.**, *Septfontaines, near Luxemburg*—Manufacturer.

Mosaic pavements, composed of very small bricks of baked clay, and used in lieu of stone and marble flags. The floors of several churches and houses in the Grand Duchy are inlaid with them.

6 **Metz, A., & Co.**, *Eich, near Luxemburg.*

Cast-iron stove; German eagle, as on the fortress of Luxemburg.

Cog-wheels for machines.

NASSAU

Commissioner, M. ODERNHEIMER.

THE most valuable and interesting series in this collection to the geologist and metal manufacturer is the very complete group of ores and minerals exhibited by the Government Mining Engineers. The specimens of hæmatite, of nickel ore, of copper and of manganese ore, are particularly deserving of notice, together with the information given as to their locality and production. Specimens of clay are exhibited also. These, with some samples of ultramarine, some miscellaneous articles, and manufactures in ivory, complete the number. The exhibitors amount to thirteen: under the first numeral, however, a considerable number must be included.—R. E.

1 THE GOVERNMENT ENGINEERS of MINES—*in the name of the Mining Proprietors.*

Grey copper ore (Fahlerz), containing from 4 to 16 ounces of silver in the cwt.

[The grey copper ore is found united with lead ore in greater or less quantity, on which partly depends the quantity of silver contained in the smelted lead.]

Specimens of lead ore; sulphuret of lead, containing from 1 to 2 ounces of silver in the cwt.; by the admixture of grey copper ore, a larger quantity of silver is obtained.

[The mines of lead ore in Nassau are in general of old date, but many veins have yet to be tried, or to be opened to a greater depth.]

Carbonate of lead, the result of oxidation in the upper and middle parts of the veins, containing sulphuret of lead. The quantity of silver in this carbonate of lead is not inconsiderable. The mines are near Oberlahnstein and Ems.

Phosphate of lead, found in combination with carbonate of lead. Remarkable for its crystallization. From the lead mine near Ems.

Specimens of copper ore; from Dillenburg, copper pyrites, containing 30 per cent. of copper.

[The copper of Nassau is of the best quality, but the quantity produced is, at present, small. Engines for draining the deeper mines are about being erected.]

Specimen of Kupferindig (sulphuret of copper, containing 66 per cent. of copper); found associated with copper pyrites. Ferruginous red oxide of copper with malachite (green carbonate of copper); the produce of oxidation in the upper part of the copper veins.

Zinc ore, *sulphuret of zinc*. This ore fills part of the lead veins, and has been used of late years for producing metallic zinc.

Manganese ore, pyrolusite (the greatest part) and psilomelane, *peroxide of manganese*. District of the Lahn.

[The mines of manganese ore in Nassau have been opened chiefly within the last 15 years, and yield a vast produce. The quantity raised every year is above 20,000 tons English, and the ore is exported to all quarters of the world. 1,200 persons are employed in the mines and washing-mills. Manganese ore is used for extracting chlorine in the manufacture of soda from common salt; for glazing in potteries; for whitening glass, &c.]

Specimens of iron ores, red hæmatite, red oxide of iron.

[The red hæmatite is raised in numerous mines, in very great quantity: it yields iron of superior quality, in the furnaces of Nassau, worked with charcoal. This iron ore is also exported to the coal districts of Germany and to France, for the purpose of improving iron. From 1,500,000 to 2,000,000 cwts. of iron ore are raised every year, of which the half is smelted in Nassau. Part of the iron ore contains calcspar, and is used in that state as the best admixture for smelting. Magnetic iron ore, oxydulated iron. This ore is found united with red hæmatite. Hydrous oxide of iron, brown hæmatite—*stilxuosiderite.* This ore is found in Nassau in great quantities: it is chiefly worked for exportation, and is used especially for producing hard steel. Spathose iron; from Hachenburg. There are only a few mines of spathose iron in Nassau, near the Prussian country of Siegen; the ore, and the steel produced from it, are much esteemed.]

Specimens of bituminous coal or lignite—of remarkable wood-like character, covering a space of about 100 English square miles; used in Nassau and the neighbouring countries as the principal household fuel. For technical purposes the lignite is valuable. At present the yearly produce amounts to 1,200,000 cwts., but the quantity which can be raised is incalculable.

Slate. The mines of slates in Nassau near the Rhine and Lahn are of good quality.

Heavy spar, *sulphate of barytes*.

[This spar was formerly not worked in great quantities, but new discoveries of rich veins promise a considerable produce. The heavy spar is used as the basis for many sorts of colours, in order to give them more body. White lead is very commonly adulterated with heavy spar. It is also used in potteries for glazing and mixing with clay.]

Fuller's earth. In some parts of the country deposits of this substance have been worked for a long period. Extensive deposits have been recently found in other districts.

Specimens of potter's clay, and coloured earth; ochre.

[Nassau is very rich in potter's clay, of the best quality; it is partly exported in a raw state under the name of Valendar clay. The manufacture of earthenware in Nassau is susceptible of greater development; a great drawback hitherto having been the cost of fuel. These clays are manufactured into stone-ware cruets, pots, cans, jugs, and hydraulic pipes of great solidity. There are also some manufactories of porcelain and fine pottery ware, clay tobacco pipes, and common earthenware.]

Samples of stone-ware, to show its mass. This stoneware is extremely cheap, and is exported in great quantities.

[The duchy of Nassau, though of small extent, is singularly rich in mineral produce, and the variety is perhaps more remarkable than the actual quantity of such riches. A large part of the country is covered with basalt, but beneath and amongst this are schists abounding with small mineral veins, and alternating with altered limestones and marble. Mines have been worked extensively in the upper part of the valley of the Lahn, where the principal mineral produce is rich copper ore. A little to the west are masses of iron ore, amongst which the *stahlstein*, or sparry carbonate, is the most remarkable. There are also in many places veins of rich argentiferous galena, formerly worked to much greater extent than at the present day. Some of the mines also contain nickel, cobalt, zinc, and manganese in considerable quantities. Dillenburg may be regarded as the capital of the mining district of Nassau.

The beds of lignite, near Hachenburg and elsewhere in the country, are very thick, and contain a large quantity of material; but hitherto they have not been economically worked, nor has the lignite been used to any extent compared with the large supply that exists.—D. T. A.]

2 LOSSEN, M., *Iron Foundry, Michelbach*—Proprietor.

Iron. Samples of pig, cast, and bar iron. Grey tender pig, or cast iron, with specimens of slags and artificial plumbago. White hard pig and cast iron. Plate of cast iron, direct from the high furnace. Samples of cast iron bars, 3 feet long and 1 inch square, broken by deflecting them in the middle to the extent of one inch. Samples of bar iron from the puddling process, once refined. The bars rolled and bent, in right angles, and perforated by hammering when cold. Samples 2½ inches broad, and ¾-inch thick, worked on edge with hammers of 13 lb. weight, without showing any cracks. Iron bar, bent when hot at a right angle; the one end forged to show the texture. Samples, bent to breaking. Iron axle (with box of cast iron), bent cold.

3 THE ISABELLEUHUTTE SMELTING WORKS, *near Dillenzburg.*

Specimens of nickel and compositions of it.

[Nickel is found in combination with sulphur, and mixed with iron and copper pyrites. The separation of the metal is now performed, not by smelting, but by solution in acids.]

Specimens of nickel, in cubes, as it is brought to market, containing 97·5 per cent. of nickel, ·5 per cent. of copper, ·9 per cent. of iron, 1·1 per cent. refuse and loss. German silver, bar, polished on one side (the composition being 8 copper, 3 nickel, 3½ zinc); and German silver plate, polished on one side (composition, 8 copper, 3 nickel, 6½ zinc).

Combination of arsenic, nickel, and copper with sulphur and a small portion of iron, the produce of the smelting process.

[In the mines 7,000 hands are occupied, and 2,000 more at the smelting works, or, in all, 9,000. The population dependent upon the mining industry is, therefore, equal to 45,000, or the tenth part of the whole population of Nassau.]

Specimens of clay tobacco-pipes: exhibited for the cheapness of produce, and to show the quality of the pipe-clay. Specimens of ochre and earth colours.

4 ROSSLER, FREDERIC VON, *Westerburg.*

Coke manufactured from bituminous coal.

5 THE MARBLE MANUFACTORY AT *Diez.*

Specimens of manufactured marble, including vases, candlesticks, snuff-boxes, and marble columns.

[The marble of Nassau forms part of the transition rocks of that country. This marble, of different tints—red, black, yellow and grey—is worked in manufactories and single workshops in the country near Lahn. Monuments, columns, chimneys, vases, chimney-pieces, &c., are made of it. The quality of the marble of Nassau is not very excellent, as the fossiliferous limestones which put on that character are rather metamorphic than truly crystalline. They are thus brittle, much veined, and of irregular texture; but many of them are very beautiful and well adapted for ornamental purposes. The specimens exhibited are for the most part small, but possess some interest.—D. T. A.]

6 LEICHER, A., & Co., *Wiesbaden*—Manufacturers.

Samples of red burnt terra cotta clay.

Articles manufactured of the clay. Columns and hanging flower-vases, to show the quality of the material and the style of workmanship.

7 ROEHR, FRIEDRICH, *Wiesbaden*—Manufacturer.

Samples of ultramarine, free from adulteration.

HECKEL, T. A., *Biebrich*—Manufacturer.

Clarionets, in A, B, and C, of cocoa-nut wood, and bassoon, of maple wood with valves of German silver, of new and improved construction.

9 WINGENDER BROTHERS, *Hoehr.*

Assortment of clay tobacco-pipes.

10 MUHLENBACH & THEWALD, *Hoehr.*

An assortment of clay tobacco-pipes.

11 MONTAG, LUDWIG, *Wiesbaden*—Manufacturer.

Basket of black buffalo-horn, inlaid with white Brazilian horn.

12 BEESTEN, J. VAN, *Wiesbaden*—Artist.

Models of fruits, embossed in wax.

13 GEISMAR, LUDWIG, & Co., *Wiesbaden*—Manufacturers.

Gun press, overlaid with staghorn, the ornaments in ivory, 7 ft. high, 4 ft. broad, and 1½ ft. deep.

Cup in ivory, with figures in alto and basso relievo, subject "Christ blessing the children."

Brooches in ivory, of various designs. Bracelets in ivory, of seven links, representing figures of game.

"Porte-monnaie;" paper-knives; letter-case, and letter-weights.

NORTH GERMANY.

HANOVER.—MECKLENBURG STRELITZ.
MECKLENBURG SCHWERIN.—NUREMBURG.—OLDENBURGH.

HANOVER

North Areas, G. H. 65, 66; I. 55 to 57.

Commissioner, F. Stahlschmidt, Esq., 14 *Mark Lane.*

The productions of this kingdom are represented by ten exhibitors. They contain specimens of raw material, a few manufactures, and objects of art. Among the former are samples of asphaltum, employed to a large extent for pavement: an electro-magnetic telegraph, on the registering system of Professor Morse of America, is also exhibited, with some improvements and additions of the exhibitor's. A bronze lustre for sixty candles, and busts in the same metal, represent the Fine Arts' Class, and specimens of linen and leather the textile manufacture, and that of the preparation of skins, &c.—R. E.

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1 **Henning**, *Limmer, near Hanover.*

Specimens of asphaltum:—Raw asphaltum stone; asphaltum earth; melted asphaltum in cakes; asphaltum prepared for covering roofs and pavements; pavements of stamped asphaltum earth.

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2 **Hostmann, C.**, *Celle.*

Ink for typographic and lithographic printing, with specimens of soot and boiled oil, together with printed proofs.

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3 **Tanner, C. D.**, *Hanover.*

Brace of pistols, in case; gun with two double barrels in case; rifle in case.

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4 **Lohdefink, W. A.**, *Hanover.*

An electro-magnetic apparatus for telegraphs, on Morse's system, together with a subsidiary apparatus ("Relais"), and a paper roller.

[Morse's system of electro-telegraphic communication is a variety of the registering telegraph. The arrangement includes the following features:—A strip of paper was made to pass slowly under a pencil, in connection with an electro-magnet. The pencil traced a straight line until the magnet was thrown into action by an electric current through the wire. Its course was then slightly altered, and in this manner a sign was made on the paper. Such being the principle, it is easy to see its practical application to the purpose of communicating intelligence.—R. E.]

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5 **Hansen, John Godfrey**, *Hildesheim.*

Piece of sail-cloth; piece of linen (called "Franzleinen").

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6 **Schultze, Daniel**, *Bodenteich, Luneburgh.*

Various samples of linen; some of raw or unbleached linen; and some of linen yarn and flax.

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7 **Wagner, Charles Augustus**, *Hanover.*

A hat, with a felt body, covered with plush; another, the body of cotton cloth, covered with plush; another hat, also covered with felt. These hats are made upon a new principle, which, besides improving the shape, enables them to be made exceedingly light.

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8 **Bernstorff & Eichwede**, *Hanover.*

Gilt bronze lustre for sixty candles.

Bust in bronze, of His Majesty the King of Hanover.

Small bronze statue representing the painter Holbein.

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9 **Herting, Charles**, *Einbeck.*

Specimen of paper-hanging,

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10 **Friedrich, J. P.**, *Norden.*

Three calf-skins, dressed.

MECKLENBURG STRELITZ

North Areas, G. H. 65, 66; I. 66.

Commissioner in London, Dr. Von Viebahn, 43 *Albion Street, Hyde Park.*

Four exhibitors from this State appear by their products. Among the articles shown are some adapted to the purpose of warming and ventilation. A specimen of ornamental work applied to an object of once universal employment—a spinning-wheel—is also exhibited. In addition is a new extract from madder applicable to the purposes of the dyer and calico-printer.—R. E.

1 Benecke, Wilhelm, *Neustrelitz*—Manufacturer.

Portable apparatus of tin-plate generating steam. Brass stoves for heating rooms by steam.

2 Lange, Carl, *Neustrelitz*—Manufacturer.

Air-tight door to a stove for heating rooms, by which smoke is entirely prevented and fuel economised.

Drawing of a stove, constructed on the principle of the safety-lamp of Sir Humphry Davy.

3 Scharenberg, Adolf, *Neustrelitz*—Inventor and Manufacturer.

Finest madder-extract for dyeing; produced by a new method.

4 Gundlach, Carl, *Wesenberg*—Manufacturer.

Spinning-wheel, with inlaid work, consisting of 450 pieces.

MECKLENBURG SCHWERIN

North Areas, G. H. 65, 66; I. 66.

Agent in London, M. Pigleheim, 14 *Tavistock Street.*

The contributions of this State include several of practical value. The distilling apparatus exhibited forms an appropriate adjunct to the excellent collection of charcoal of different kinds, also alum. The latter product—of which the production in our own country is comparatively trifling and unimportant—represents a highly-interesting department of industry carried on to a most important extent in many continental States, where charcoal forms the principal fuel employed for domestic and for manufacturing purposes. In its preparation other products are obtained, such as tar, and impure acetic acids. The application of the latter to the above, and in combination, in the form of a salt of iron, is illustrated by one of these exhibitors. Specimens of the gunsmiths' art, of cutlery, of carving, and of textile products, complete the list of these articles.—R. E.

1 Stolzenberg, J., *Genoyen.*

Apparatus for distillation.

2 Schmidt, J., *Güstrow.*

Three guns.

3 Gerber, C. H. A., *Güstrow.*

Two table-cloths.

5 Meyne, J., *Schwerin.*

Soup-tureen of German silver.

6 Meyer, W., *Warnemünde*—Proprietor.

Charcoal of different qualities of wood for brass, iron, and copper foundries, and other mechanical purposes.

Charcoal prepared for the use of distillers and rectifiers.

Charcoal of soft wood, pulverised and manufactured for manure.

Cinders of wood of ready inflammability.

Roasted beech-wood, for housekeepers' use.

Roasted pine-wood, for the use of steamboats and railroads. It lights quick, and generates steam in a very short time.

Peat charcoal, in large pieces, for all technical purposes, and where an intense and lasting heat is required. Manufactured in ovens of the exhibitor's invention.

Peat charcoal, prepared for distillers and rectifiers.

Peat charcoal, pulverised when dry, for the use of manure and as a fertiliser.

Prepared peat charcoal manure. The best quality of peat charcoal, pulverised in its dry state, is mixed with other liquid manures, containing gaseous matters, such as ammoniacal vapours, &c.

Pyroligneous acid, prepared for the purpose of preserving hides, furs, sailcloth, ropes, hemp, &c.

Pyroligneous acetate of iron for preserving timber while actually growing, by impregnation.

Preserved timber from trees, to which a solution of the acetate of iron was applied while in actual process of growth. A bedstead polished.

A bedstead unpolished.

Timber preserved by brushing with, or steeping in, this acetate of iron.

Saw-dust prepared with pyroligneous acid for the preservation of smoked hams, sausages, or other meat sent to a tropical clime.

Hides preserved with pyroligneous acid, and not tanned.

Hides preserved with pyroligneous acid, and hereafter tanned.

Wood for common lucifer matches.

Wood "percussion needles." Matches manufactured by a machine invented by the exhibitor.

[It is a well-known fact that the destructive distillation of wood in iron retorts yields an acid product which is largely used in the arts, in chemistry, and in medicine. The name of this product, pyroligneous acid, indicates its origin. It is an impure acetic acid, containing generally a strong impregnation of the empyreumatic volatile acids of the wood. To these in part are due its preventive effects upon organic substances. But acetic acid alone is, as is well known, a powerful antiseptic. The application of a solution of impure acetate of iron to the preservation of timber while yet standing in the forest is interesting. —R. E.]

8 Bear, H., *Rostock*—Manufacturer.

An ornament of furniture, carved in lime-tree wood, in a fancy style, called by the French "baroque."

9 Bahrt, H. *Schwerin* (City)—Manufacturer.

Seven concave razors, damasked.

10 Yerber, C. *Güistrow, Mecklenburg*—Manufacturer.

Two half silk-damask table-cloths, embroidered, the one with the arms of England, the other with those of Mecklenburg.

NUREMBURG

The only exhibitor from this country has sent two specimens of skill in metallurgical manipulation. Of these, the first illustrates the extraordinary ductility of brass, under proper management, the other that of iron. The fine wire thus produced is applicable for the manufacture of wire gauzes, that of iron being used for the miner's (Davy) safety-lamp.—R. E.

Fuchs, Marcus, *Nuremburg*—Manufacturer.

One pound extra fine brass wire, drawn to the length of 76,000 feet.

One pound of extra fine iron-wire, for mining-lanterns, drawn to the length of 41,000 feet.

OLDENBURGH

North Areas, G. H. 65, 66; I. 66.

Agent in London, M. Piglheim, 14 *Tavistock Street.*

Three exhibitors represent Oldenburgh in the Exhibition. Their productions are flax yarn, prepared quills, and a model of the famous Castle of Heidelberg. The latter is made to a scale.—R. E.

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1 Casseboнм, T. H. *Oldenburgh.*

A model of Heidelberg castle, carved in corkwood, in exact proportion to its size on the scale of $\frac{1}{135}$.

2 Bramlage, A. *Lohne.*

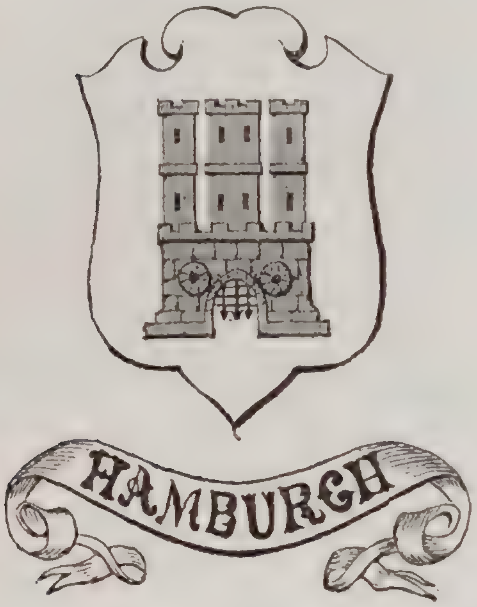
An assortment of manufactured quills.

3 Sharnhorst, C. *Oldenburgh.*

Flax thread, spun by the hand.

HANSE TOWNS.

HAMBURGH.—LUBECK.



North Areas, G. H. 65, 66; L. 66.

Commissioner in London, C. Noback, Esq., 20 *Spring Gardens; Agent,* M. Piglheim, 14 *Tavistock Street.*

The number of exhibitors representing this State is about one hundred and twenty, and objects in a variety of classes are sent for exhibition. Among the raw materials are some specimens of manganese ore, sugar, starches, &c.; but these are few, and comparatively less interesting than the articles found in other Classes. Several musical instruments, a rose-engine lathe, clocks, &c., deserve attention. Some examples of embroidery and textile fabrics are also exhibited. In the manufacture of lacquered wares and iron-work the artificers of this State have enjoyed much celebrity, and several manufacturers of such articles have sent specimens of their workmanship for exhibition. In furniture, also, this collection is well supplied, a number of articles in rosewood and ebony exhibiting the peculiar style of the Hamburgh makers. In the fine arts are several finely-carved ivory and glass goblets, and some good specimens of carving in wood. Among miscellaneous objects attention will be drawn to a display of fifteen hundred walking-sticks, imposingly arranged.—R. E.

1 Meyer, T. W.—Producer.
Specimens of manganese ore.

2 Hildebrand, C. G.—Producer.
Glaziers' writing diamonds.

3 Reessing, H. B.—Producer.
Samples of refined sugar and sugar-candy.

4 Wagener, J. C. L.—Producer.
Samples of refined sugar.

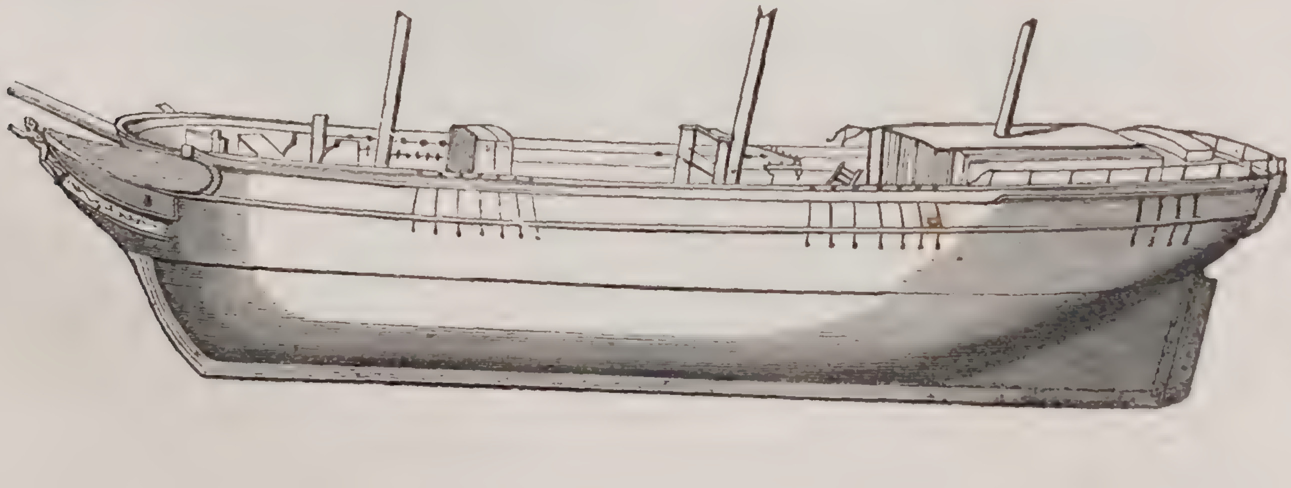
5 Peterson, John—Producer. (Agent, T. Peterson, Water Lane.)
Oil-cakes.

6 Reynold, A. & G.—Producers.
Fire-engine.

7 Croissant & Lauenstein—Producers.
Phaeton, made of rose-wood, with carvings, bronze springs, &c.

8 Fridrichsen, K. A.—Producer.
One, three, and two-sheaved blocks for ships.

9 Bufe, T. C. & Son, *Cuxhaven*—Producers.
A brig and barque, with drawings; the barque now building. A side view of the hull of this barque is presented in the cut below.



10 Nieberg, J. L.—Producers.
Constant pendulum clock. Patented by Dr. Moenck.

11 Bröcking, W.—Producer.
Electro-magnetical pendulum clock; clock with half-second pendulum.

[The application of the electric principle to clock-work is by no means recent. Next to the invention of the electric and magnetic telegraphs, it may be regarded as one of the most successful applications of this subtle agency to practical purposes. The attractive force of powerful magnets, so rendered by induction, through the instrumentality of coils of copper wire around pieces of soft iron, is the agency employed to set the train of wheels in movement. Such clocks, when well made, exhibit great constancy and regularity of movement, and several large specimens are in the Exhibition.—R. E.]

12 Baumgardten & Heins—Producers.
Horizontal pianoforte.

13 Schroder, C. H.—Producer.
Horizontal pianoforte.

14 Rumms, H.—Producer.
Upright pianoforte (piccolo).

15 Cellier, F., & Son.—Producers.
Violoncello.

16 De Rode, F.—Producer.
Pair of kettle-drums, with newly-invented mechanism.

17 Kohn, M. A.—Producer.
A rose-engine lathe.

[The form of lathe which is called a rose-engine is one of great ingenuity, and, when skilfully employed, is capable of producing the most beautiful specimens of ornamental turning. The principle is extremely simple; but it can scarcely be rendered intelligible in the absence of diagrams, or unless on inspection of the machine itself. Instead of the ordinary cylindrical form produced by the common lathe, the rose-engine produces, among other varieties, cylinders which, on section, exhibit an indented outline, resembling the arrangement of the petals of a rose.—R. E.]

18 Pepper, Otto—Producer.
Samples of curled horse-hair.

19 Wamosy, D.—Producer.
Varnished calves' skins, and other leather.

20 Kruger, A.—Producer.
Gentleman's riding-saddle.

21 Gerbers, Ed.—Producer.
Nautical chart on varnished linen cloth. Varnished double elephant paper for drawing.

22 Möller, C. H. A.—Producer.
Three ledgers.

23 Lade, Ed.—Producer.
Samples of corahs; designs and plates for corah-printing.

24 Arnot & Berend—Producers.
Table-cloth printed on wool; piece of printed woollen furniture-cloth.

25 Dissmar & Harloff—Producers.
Pieces of printed and painted table-covers.

26 Heiser, F. L.—Producer.
Coloured curtains.

27 Muckenheim & Alpers—Producers.
Two window-blinds, ornamented with a medallion and a landscape.

28 Verheim, J.—Producer.
Window-blind, ornamented with a landscape.

29 Windmüller Brothers—Producers. (Agent, W. Meyerstein, 15 Watling Street.)
Printed mousseline-de-laine cravats, shawls, &c.

30 Rey, G. E.—Producer.
Ladies' robes, embroidered.

31 Schelle, J. G.—Producer.
Embroidery.

32 Gerson, Henriette—Producer.
A darned napkin, and a piece of lace also darned.

[The exhibitor has cut out of this napkin a hole of some inches square, and then filled up the hole with yarn. This lace, in which 10 holes of different sizes were cut, had been sealed in its defective state by the Committee, and was brought back by the exhibitor, without any visible mark of darning.]

33 Gompertz, B.—Producer.
Hair-embroidered pictures of Her Majesty Queen Victoria and the Prince of Wales, and of the Hamburgh Exchange.

34 Cahen, S. J.—Producer.
A white felt saddle-cloth, with a brown beaver border, and the arms of Hamburg at each corner.
A silk hat and a beaver hat.

35 Curjar, Th.—Producer.
Lady's beaver bonnet (drab). Children's kerseymere bonnet. Beaver hat. Various silk hats.

36 Sahlberg, C. F. G.—Producer.
Gentlemen's and ladies' boots and shoes.

37 Schoost, W. C.—Producer.
Gentlemen's and ladies' boots and shoes.

38 Magdalinski, J.—Producer.
Waterproof shooting-boots and gentlemen's dressing-boots.

39 Kinol, A.—Producer.
Jockey-boots and gentlemen's dressing-boots.

40 Hensel, C. J.—Producer.
Ladies' shoes.

41 Kroll & Kopp, F. W.—Producers.
Gentleman's laced coat.

42 Cohn, L. H.—Producer.
Gentleman's cap, without seam, made of a new stuff.

43 Ritter, W.—Producer.
Set of gimlets and set of augers, on improved principles, for metal and wood.

44 Hünten, J. A. F.—Producer.
Circular saw for surgical use.

45 Berens, W.—Producer.
Engraved and engine-turned brass plates for book-binders and burnishers.

46 **Schultze, F.**—Producer.
Engraved music plates.

47 **Lehrmann, J. J.**—Producer.
Parrot's cage of brass.

48 **Schultz, F. J.**—Producer.
Bird-cages, blue lacquered, brown lacquered, and brass.

49 **Schulte & Schemann**—Producers.
Tea comforts; coal-vases, coal-bucket and zinc bath; also a set of screw clubs, made by E. Rochlitz; a bathing-vat, spelter-plated inside, lacquered outside, made by J. A. Lehmann.

50 **Richter, J. M. S.**—Producer.
Parrot's cage of brass.

51 **Heine, G. T.**—Producer.
Parrots' and birds' cages of brass.

52 **Flœrsheim, J. M.**—Producer.
Fuel box; tea comfort and kettle.

53 **Korlan, G.**—Producer.
Frames for daguerreotypes.

[The vast extension of the beautiful art discovered by Daguerre has called into existence a number of trades of more or less consequence. Among these is that of the maker of frames for daguerreotypes. These frames are often made of very simple materials, but are occasionally of a more costly kind. They are rendered necessary, in consequence of the liability to injury of the delicate surface of the impressed plate, even after it has been well gilded by the usual process.—R. E.]

54 **Brahmfeld & Gutruf**—Producers.
Silver writing-stand.

55 **Meyer, Diedr.**—Producer.
Chimney-screen; wine-coolers; tea-plate; night-lamp with two lithophanic plates. A parrot's cage of brass; a lacquered tray, ornamented with a picture.

56 **Hildebrand, C. L.**—Producer.
Window-glass, glass letters, and a glass box. Diamonds and planes for cutting glass and window glass, glaziers' hammers.

57 **Wright, J. G.**—Producer.
Soda-water bottles.

58 **Hansa, —**, Producer.
Various specimens of earthenware potteries.

59 **Albrecht, A.**—Producer.
Varnished chimney-screen.

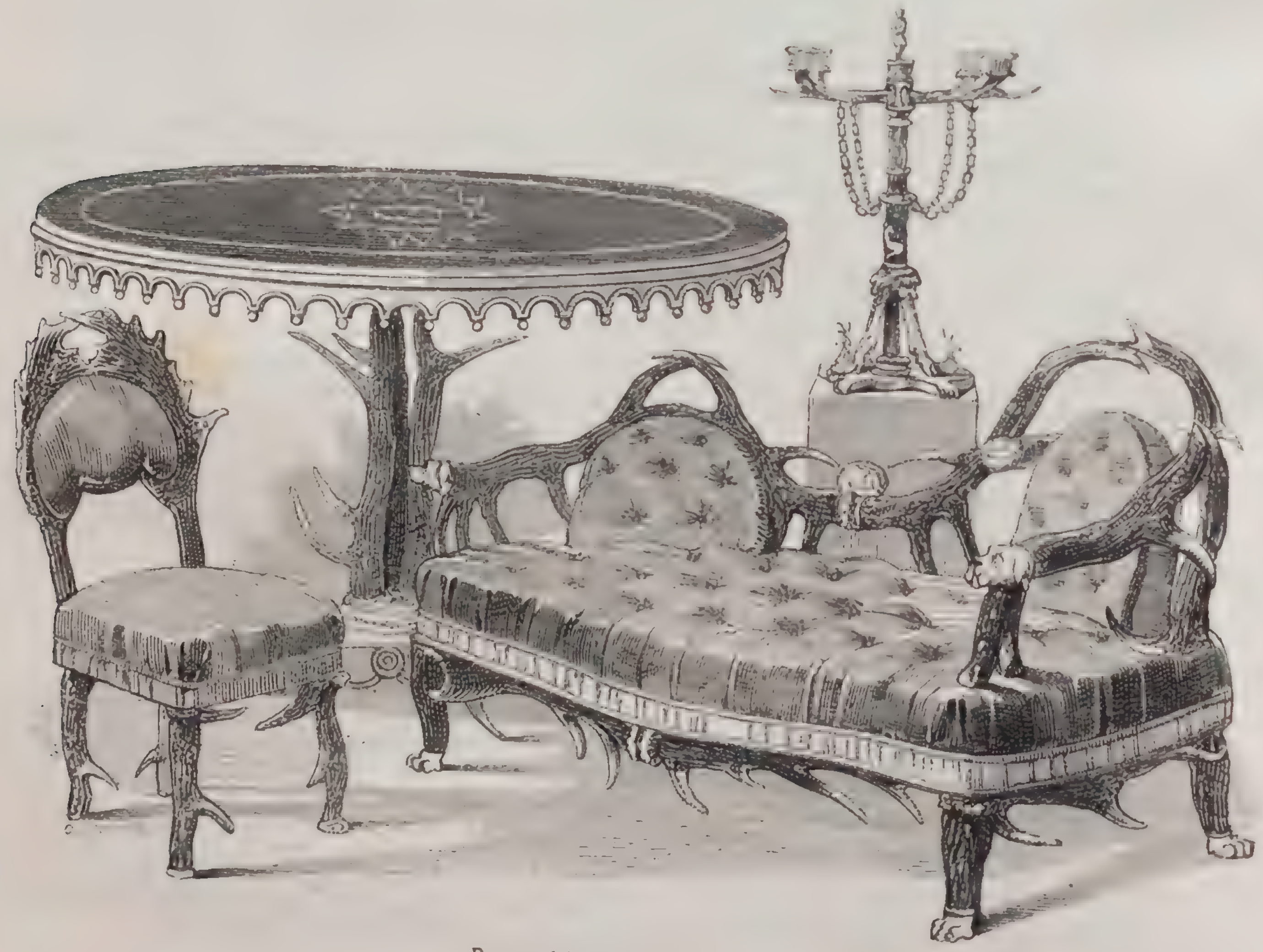
60 **Rampendahl, H. F. C.**—Producer.
Looking-glass with stag-horn frame.
Various specimens of stag-horn furniture. These are represented in the illustration below.

61 **Huebener & Pohle**—Producers.
Sofa looking-glass in rococo style frame.

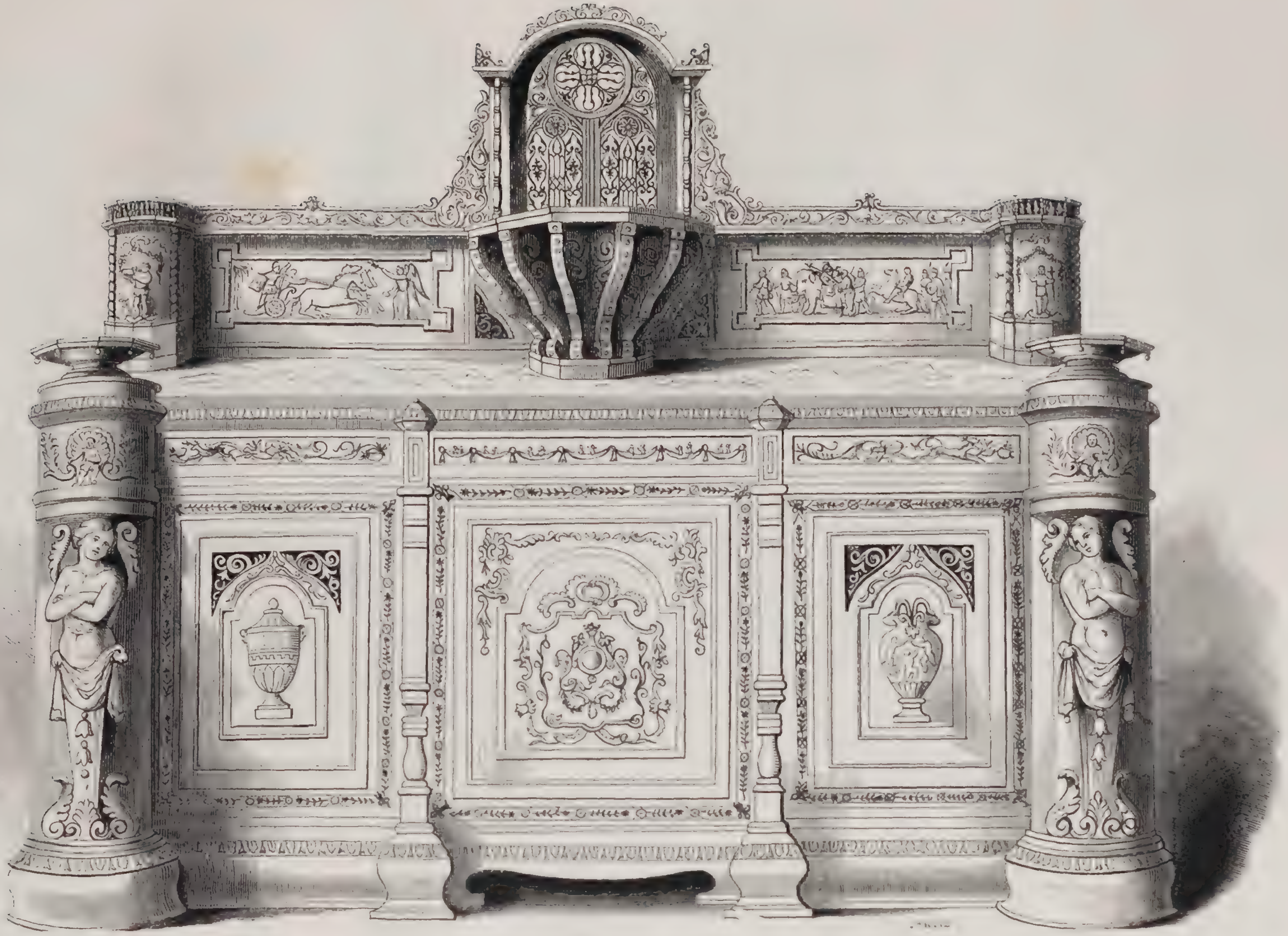
62 **Korlan, G.**—Producer.
Three looking-glasses. A window-blind, ornamented with a landscape.

63 **Bruening, C. D.**—Producer.
Writing bureau.

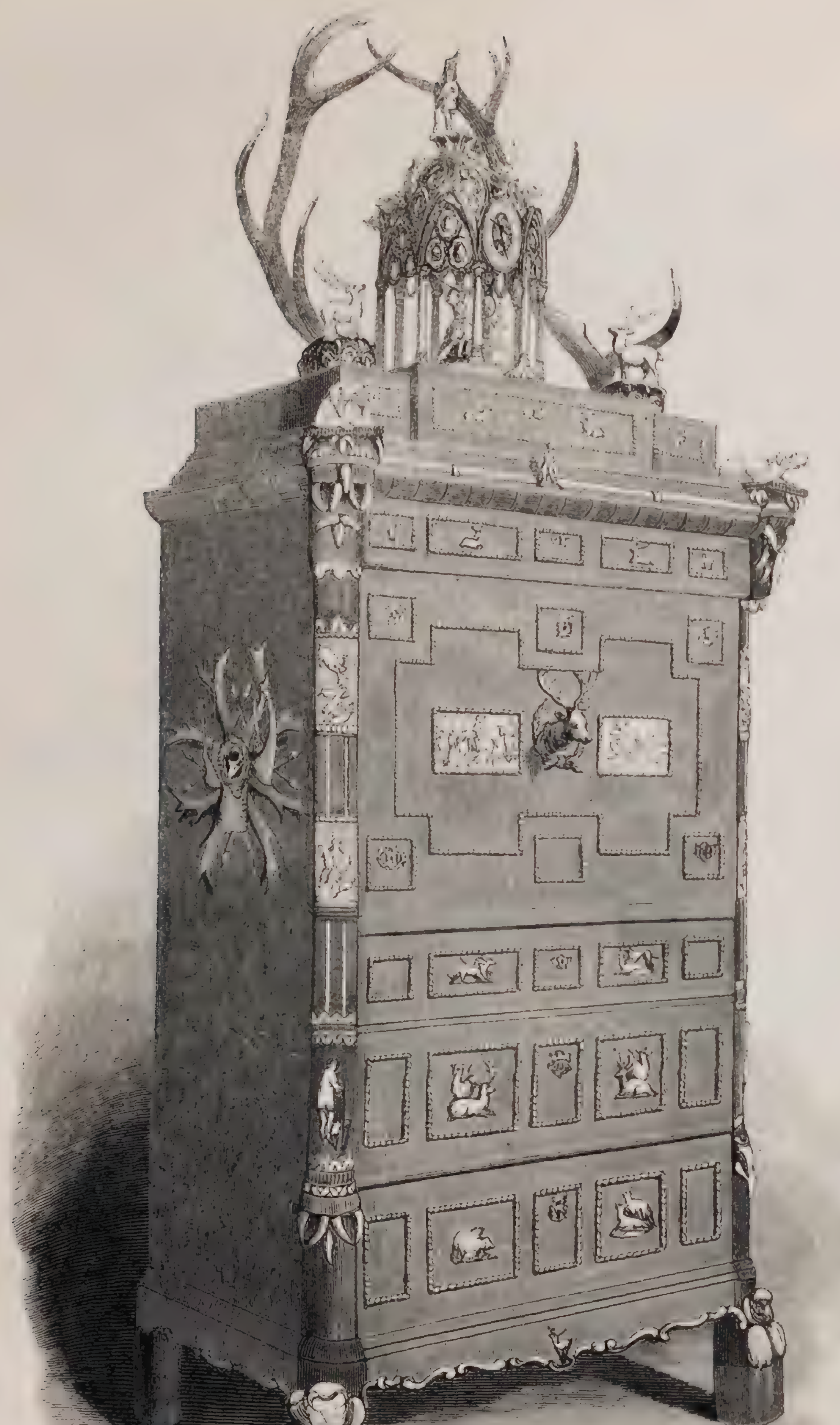
64 **Hagen, T. F.**—Producer.
Ebony sideboard.



Rampendahl's Stag-horn Furniture.



208. AN ORNAMENTAL SIDEBOARD. HAMBURGH.



AN INLAID WRITING BUREAU. H. F. C. RAMPENDAHL. HAMBURGH.

65 **Engels, H. W. M.**—Producer.
Sideboard of rosewood (Jacaranda), ornamented with bronze, and carvings in ebony.

[The French sometimes give the name Jacaranda to rosewood, under the idea that the plant called Jacaranda by the Brazilians yields it, which is not the case. The same word has perhaps been the origin of Palisander (Palixander) badly written.—J. L.]

66 **Sengle, J. G.**—Producer.
Sideboard of rosewood, inlaid, and ornamented with looking-glasses, marble slabs, and carvings.

67 **Adikes, J. D.**—Producer.
Sideboard of rosewood, inlaid and ornamented. This sideboard is represented in the accompanying Plate, 208.

68 **Geseller, H.**—Producer.
Gentleman's arm-chair of rosewood; lady's arm-chair to correspond.

69 **Plambeck, C. F. H.**—Producer.
Round sofa-tables, with inlaid work, representing in the centre the meeting of the emperor of Germany, Charles V., with Francis I., king of France. The border represents Pope Paul III. and some of the Farnese family, to which he belonged.

70 **Rampendahl, H. F. C.**—Producer.
Writing bureau, inlaid with hart-horn and ivory work. This bureau, which represents a peculiar style of continental ornamentation, and is surmounted by a clock of singular design, is represented in the adjoining Plate, 178.

71 **Faulwasser, C. E.**—Producer.
Lady's ebony work-table, inlaid with bronze and marqueterie; sofa-table with inlaid work; sundry boxes.

72 **Köhler, J. H.**—Producer.
Sofa-tables of rosewood, with inlaid work.

73 **Bey, H.**—Producer.
Lady's writing-table, with reading-desk, inlaid and ornamented with gilt metal. A chess-board table.

74 **Loose, C. L.**—Producer.
Round table, with inlaid work; lady's work-table, with inlaid work; sundry boxes, with inlaid work.

75 **Loose, J. R.**—Producer.
Round table, sundry boxes, with inlaid work.

76 **Muller, W. O.**—Producer.
Rosewood tables, with inlaid work.

77 **Kopke, C. J. C.**—Producer.
Lady's writing-table in rosewood.

78 **Heymann, J. D.**—Producer.
Rosewood sofa and chairs. Rosewood easy-chair.

79 **Werner & Piglhein.**—Producers.
Table with inlaid work; sofa; rocking-chair; sylphe.

80 **Kruger, G. H.**—Producer.
Basket-work rocking-chair; arm-chair, &c.

81 **Mehne, Ph.**—Producer.
Lady's rosewood work-table, ornamented with marqueterie and carvings in ebony.

82 **Koll, J. N.**—Producer.
Rosewood chairs. Side-table, with marble slab.

83 **Jantzen, J. C. F.**—Producer.
Pattern card of turners' work.

84 **Eckert, J. C. H.**—Producer.
Pattern cards, with different objects of mother-of-pearl and ivory work; pipe-tubes.

85 **Umlauff, Aug.**—Producer.
Pattern card of tortoiseshell combs.

86 **Meyer, H. C., jun.**—Producer.
Large, small, and square pattern cards, containing:—
1. 500 walking-sticks.
2. Samples of ivory, whalebone, ratans, &c., cut very fine.
3. Whips and rods.
4. A glass case of stick buttons and caricatures, cut out in bone, ivory, &c.

87 **Hartge & Hube.**—Producers.
Samples of sticks, whips, whalebone, canes, &c.

88 **Aspern, W. M. V.**—Producer.
Lady's box (velvet).

89 **Wöbke, H.**—Producer.
Tobacco pipes (Turkish clay). Genuine meerschaums.

90 **Olshardsen, F.**—Producer.
Artificial flowers, arranged in a frame.

91 **Löwenthal & Co.**—Producer.
Dolls' heads (wax and papier-maché).

92 **Douglas, J. S.**—Producer.
Samples of soap.

93 **Engelhard, F.**—Producer.
Statue of Richard Cœur de Leon (bronze).

94 **Kleft, Br.**—Producer.
Marble figure of the Saviour, in relief; two greyhounds in ivory.

95 **Schiller, J.**—Producer.
Girl, with a bunch of grapes. Model of Flora, plaster

96 **Engelhard, W.**—Producer.
Relief in plaster, illustrating Northern mythology; a series of designs: model of the Lorley.

97 **Bohm, Aug.**—Producer.
Engraved glass goblet: subject—Battle of Alexander against Darius.

[This fragile material is often made the subject of a great expenditure of taste and labour. The art of engraving on glass has in a particular manner been practised with great success by continental artists, and the specimens frequently exhibited are extremely chaste and elegant. The depth of the cutting, and the delicacy of the outlines, require a well-annealed and a very pure material. As much of the continental glass is made without lead, a peculiar whiteness of tone is often observed in the engraved specimens.—R. E.]

98 **Rampendahl, H. F.**—Producer.
Engraved ivory goblet.

99 Bostelmann, A.—Producer.
Coloured church window in miniature.

100 Rösing, F. W.—Producer.
Two coloured glass transparencies; two table tops of marble mosaic; two table tops in wood, exylocaustic work; two table tops, with paintings, fixed by steam.

101 Cornides, Ludw.—Producer.
Transparent horn paintings.

102 Schuberdh & Co.—Producers.
Music of the Opera "Lichtenstein," bound in velvet.

103 Kohnke, F. J.—Producer.
A daguerreotype painting, coloured.

[The colouring of daguerreotype paintings is effected by using a delicate brush, and applying the colours to the surface of the silver plate in a state of fine powder. The colours are not generally very permanent. The effect of their application is more popularly pleasing than that of the uncoloured pictures; but the exquisite gradations of light and shadow observable in the latter, when untouched by human art, renders the appearance of paint generally distasteful to the daguerreotypist himself.—R. E.]

A glass plate, with inlaid figures, blue on one side and brown on the other. Subject: Cromwell at Marston Moor.

104 Schnautz, Wm.—Producer.
A sausage.

105 Meyer, *Berlin.*—Producer.
Two green Orlean petticoats. Samples of horn and prepared horse-hair.

106 Bartlels, J. C. M.—Producer.
Wood carvings.

107 Zuber, J.—Producer.
Different carvings in ivory.

108 Prale & Ballheimer.—Producer.
Mahogany veneer; 54 plates of veneer cut out of a 3-inch piece.

109 Thiele, jun.—Producer.
A child's sofa.

110 Classen, F. F.—Producer.
A fender for a stove.

111 Buss, W. H.—Producer.
A bird-cage.

112 Schultz, G. S.—Producer.
Two bronze candelabra.

113 Boye, C. T.—Producer.
Spinning-wheel.

114 Micolci, C. L.—Producer.
Three Bibles—specimens of bookbinding.

115 Hartog, C. H.—Producer.
A fire-screen—needlework.

116 Böekel, A.—Producer.
Painted window-blinds.

117 Kähler, A.—Producer.
Lithographic writings.

118 Severin, E.—Producer.
Needlework.

119 Appel, J. C.—Producer.
Needlework, carpet, and balls.

120 Meinke, W. C.—Producer.
Five flags.

121 Beinhauer, C.—Producer.
A stove.

122 Bähr, H. & Co.—Producer.
Silk handkerchiefs.

123 Hanser-Eisen, & Messing Wearnin-Fabrick, Von Carl Thiel, *Schledehaus*—Producers.
Three iron forms for sugar refiners. Three cooking-vessels. All tinned.

LUBECK

North Areas, G. H. 65, 66; I. 66.

Commissioner, F. Stahlschmidt, Esq. 14 *Mark Lane.*

From Lubeck eleven exhibitors have sent articles for exhibition. These consist chiefly of manufactures, with two exceptions, in which oil-cakes and preserved food have been forwarded. The preparation of the latter articles constitutes, it is true, a manufacture of some importance, and of more on the Continent than in the United Kingdom. The other articles comprise guns, specimens of leather, embroidery, and fancy articles. —R. E.

1 Platzman, Conrad—Manufacturer.
Specimens of oil-cakes.

2 Carstens, Daniel Heinrich—Manufacturer.
Articles of preserved food—asparagus; young green pease; red cabbage; French beans; carrots; soup and bouillie; mock-turtle; roasted kid; chicken, with craw-fish sauce; eel in jelly; liver-sausage; duck-pie; hare-pie; mushrooms with butter; juice of cherries; milk with sugar.

3 Behrens, Johan Christian—Manufacturer.
Skin of genuine black morocco leather.
Specimen of glue.

4 Beckmann, Johann J. C.—Manufacturer.
Lamb's skin, dressed with the wool.

5 Fischer, Carl August—Manufacturer.

Guns; double-barrelled rifle, with case; fowling-piece; and rifle.

7 Brunswig, Georg Heinrich—Manufacturer.

Japanned calf's and sheep's skin.

Peaks of leather, pressed; the same, smooth, with Parisian peak, and with designs; pasteboard peaks polished, and with designs.

8 Spiegel, Wilhelm Anton Carl, & Co.—
Designers and Manufacturers.

Embroidery, on silk canvas, intended for a fire-screen.

Embroidery commenced, to show the process, on perforated card-board, intended for a portfolio.

9 Stolle, Carl—Manufacturer.

Patterns of embroidery commenced, with the silk, wool, pearls, &c., necessary for its completion:—

On perforated card-board—bottle-stand; watch-case; case for visiting-cards; thermometer; portfolio; calendar; stand for lamp; basket.

On cotton canvas—cushion; on cotton canvas—footstool.

On silk canvas—cushion.

Embroidery—a fire-screen on cotton canvas.

10 Breyer, Georg Wilhelm—Manufacturer.

A bed-screen of osiers.

11 Roeper, Friedrich—Manufacturer.

A lady's work-box, decorated with embroidery, velvet, and bronze.

THE NETHERLANDS

North Areas, F. 57, 58; G. to J. 58; North-east Central Gallery, G. H. I. 58.

Royal Commissioner, G. Goosens, Esq., F.S.A., *Union Hotel, Salisbury Square.*

The productions of this country comprise objects representative of every Class of the Exhibition, and are of a valuable and attractive character. In the Classes of Raw Materials and Produce are included several preparations for paints, cements, colours, &c. Agricultural produce and articles of food, particularly a large pasty of preserved meats, are also exhibited. Some of the chemical substances obtained from potato-starch, and used in the arts and commercially, are likewise represented. Among chemical substances of another kind, interest will be excited by the appearance of chrysammic acid, and some of the brilliant dyes obtained by its use. The textile productions of the Netherlands are represented by several exhibitors of silk, woollen—particularly blankets—and linen. Mineral manufactures and hardware have also their representatives. The agricultural implements, which exhibit peculiar features of adaptation to the continental system, deserve notice. An ingenious machine for making percussion-caps, completely automatic, and producing the caps at the rate of 8,000 an hour, is interesting. A large sugar-cane crushing-mill exhibits some peculiar, and, it is stated, improved features of general construction. Among philosophical instruments there is a dynamometer for ploughs. Models of bridges and locomotive apparatus, and some models of cutters and boats, illustrate the Classes to which they belong. Some good specimens of crystal chandeliers and flower-vases form an imposing feature in this collection. Articles of jewellery, a few sculptures, and books, complete this succinct summary of the objects contributed from the Netherlands.—R. E.

1 **Bleekrode, Prof. S.**, *Delft*, and **Enthoven, Lz.**, *Hague* (Agents, Enthoven & Sons, Moorgate Street, London)—Inventors.

Patent white paints from oxide of zinc, of different qualities. Yellow chromate of zinc. Green oxide of zinc. Chloride of zinc.

[The deleterious influence of white lead upon the health of the workmen employed, both in its use and in its production, has led to the search for some efficient substitute for it. Carbonate of barytes has been thus employed; and oxide of zinc is now becoming extensively used for a similar purpose. The latter preparation gives a good body to paint, and is almost innocuous.—R. E.]

2 **Poortman & Visser**, *Schiedam*—Manufacturers.

Sample of white lead.

3 **Stratingh & Co.**, *Groningen*—Manufacturers.

Sample of white lead.

4 **Maas, Hendrik**, *Doorn-Heg, near Amersfoort*—Manufacturer.

Hydraulic cement, recently introduced.

5 **Duura (Van) & Versteeven**, *Rotterdam*—Manufacturers.

Prussian blue. Mineral blue. Chrome yellow. Chrome green. Water blue.

6 **Diederichs Brothers**, *Amsterdam*—Manufacturers.

Specimens of Dutch water-colours.

7 **Vis, Albert**, *Wormerveer*—Manufacturer.

Pearl barley, of ordinary and fine descriptions.

Groats, dried and fumigated with sulphur brimstone, for use on board of ships. Groats, fine sort.

Starch, ordinary sort (crystallized). Blue, and white and blue, starch, in the form of pipes.

8 **Oomen, Antonius Maria**, *Ginneken, near Breda*—Manufacturer.

Collection of oil-seed cakes, for manuring fields and for feeding cattle. Cake prepared from the seed of the *Camelina sativa*, or "gold of pleasure." Hemp-seed cake, and linseed cake. A poppy-seed cake. Cakes prepared from the seed of the *Sesamum indicum*; from rape-seed, turnsol-seed, beechmast, and gourd-seed.

Glue, for the use of joiners and paper manufacturers. Samples of gelatine.

9 De Haan, Aart, *Rotterdam*—Manufacturer.

Sample of rape-seed. Rape oil, the first, second, and third qualities. It is said that the third quality gives a very clear light without smoke.

10 Deyl (Van der), Leendert, & Son, *Weesp*—Manufacturers.

Patent chocolate powder.

11 Bocken, Clemens, *Venlo, near Rotterdam*—Manufacturer.

Starch (pipe or patent), from the finest wheat flour. Starch, mixed with fine smalt.

12 Prins, C. C., *Wormerveer*—Manufacturer.

Starch, known in Holland under the name of Urling's patent starch. Best starch, manufactured in the old Dutch mode.

13 Schoneveld & Westerbaan, *Gouda*—Manufacturers.

Products from potatoes, &c.:—White potato meal or farina. Grey farina for feeding cattle. Potato gum.

Sago. White, yellow, and brown syrup. Residue for feeding cattle.

[The syrups alluded to are generally made from potato starch by an interesting process of chemical decomposition. They are employed for sweetening beer and other economical purposes.—R. E.]

14 Voorst (Van), Dirk, & Son, *Zaandam*—Manufacturers.

Samples of Dutch wheat flour.

15 Visser, Nolet, & Co., *Schiedam*—Manufacturers.

Samples of potato flour.

16 Heuveldop, H., *Leeuwarden*—Manufacturer.

Specimens of chicory.

Various articles of woollen manufacture.

17 Visser, E. E., *Amersfoort*—Manufacturer.

Samples of yellow wax.

18 Jorritsma, Athan., *Dokkum*—Inventor.

Veterinary medicine for oxen, horses, and other cattle.

19 Janssen, N. H. A., *S. Hertogenbosch*—Manufacturer.

Preserved provisions, viz.:—

A large partridge-pasty, with truffles (called bosh-pasty), containing 150 partridges, and of the weight of about 250 lbs. This pasty has been made upwards of a year, and its quality is retained, as the bottoms of the boxes would swell in case of putrefaction.

Essence of ox, veal, and chicken broth.

Four tin boxes, the contents similar to those of the partridge-pasty.

20 Smits, Pieter, *Utrecht*—Manufacturer.

"Polychromate," or "chrysammic acid," a new dye, from which a variety of other colours may be prepared.

[Chrysammic acid, if such be the acid here alluded to, has been known hitherto only to the chemist as the result of the action of nitric acid upon powdered aloes. Obtained by this process, chrysammic acid appears in golden crystals. The salts of compounds of this acid are remarkable for their brilliancy of colour; but their application in the arts is perfectly new.—R. E.]

Animal charcoal, in powder. Three specimens of animal charcoal, granulated.

21 Roosegaarde, Gerrit Jan, *Zutphen*—Manufacturer.

Sole leather, from Buenos Ayres skins, dressed by the process of sweating, and curried.

Glue, made from the residue of Buenos Ayres skins.

22 Buyteweg, Nicolaas, *Delft*—Manufacturer.

Various specimens of Holland hides. A Buenos Ayres hide. A sheep-skin, dressed. Samples of chamois leather, &c.

23 Kok Ankersmit, P., *Apeldoorn*—Manufacturer.

Morocco leathers, "basils," and "splits," in different colours and states of finish.

Calf-skins, for saddlers and bookbinders; bark-tanned.

24 Hoop, Van der Jacob, & Co., *Rotterdam*—Manufacturers.

Java ratans, cleaned and prepared.

25 Crap Hellingman, J. L., *Den Helder*—Inventor.

Mat, made of dried sea-grass (*Zostera marina*), for the use of florists and botanists. Manufactured at an institution established by the corporation of Den Helder, for the employment of the poor.

[*Zostera marina* is a native plant of the natural order *Zosteraceæ*, or sea-wracks. It is collected and dried for a few economical purposes, such as the supply of a material for stuffing cushions, or for the preparation of such rude descriptions of matting as the one exhibited. It has some medicinal virtues in popular estimation, but these are of questionable existence.—R. E.]

26 Hoogen, Van den T., *Dordrecht*—Manufacturer.

Patent standing-ropes.

27 Beeftingh (Van), N., & Co., *Katwyk, near Leyden*—Inventors and Manufacturers.

Rope, untarred, three-strand, and hawser laid, for ships' rigging; twisted in a concentric manner, with equal draught of the yarns, by patent machinery invented by one of the exhibitors. By this process, as many yarn-conductors and tubes are made use of as there are layers of yarn to be twisted into each strand. The result is, a more regular position of the yarns, in concentric layers, and a greater equality in the draught of the yarns, each layer of yarn being submitted to the pressure of a separate tube.

[By this process, the rope, in proportion to its size, or the number of yarn layers of which it is composed, not only acquires greater strength, but, at the same time, with an equal number of threads of the same yarn, becomes lighter and of less circumference, as appears from a number of experiments made by order of the Dutch Government, in 1845 and 1846. These experiments proved that a 7-inch rope, manufactured by this process, possesses an advantage of 5 per cent. in weight and 10 per cent. in strength.]

28 Lafebre, Abraham, *Gouda*—Manufacturer.

Curtain cord. Strong twine and cord for fishing purposes made of Dutch shell hemp. A drum cord and forage loop of Dutch shell hemp.

29 Dirks, H. J., *Dordrecht*—Manufacturer.

Brooms and brushes: including hair brooms; carpet brooms, with fine short hair; cobweb brushes; dusters; ships' scrubbing brushes; house scrubbing brushes; carpet, tar, greasing, and painting brushes.

30 Catz & Co., P. S., *Amsterdam*—Manufacturers.

Specimen of horse hair (drawn), for violin bows. Other specimens, including extremely long, for weaving cloth for couches; ordinary length, for weaving cloth for seats and benches; short, for weaving sieve-cloth, used also for brushes; and spun, extremely elastic.

Specimens of ordinary quality, for stuffing chairs and mattresses.

[The hair of the horse is a most important article to the manufacturer. Two kinds are recognised—*curly* and *straight*.

The preparation of hair for the manufacture of damask hair-cloth and other fabrics, consists essentially in steeping it in an alkaline liquid until it is fit for use. It is subsequently dyed. When of the desired colour and suppleness, it is woven in an ordinary loom, and hot-calendered. Hair-ropes are formed as other ropes. Hair for stuffing is formed of the requisite elasticity by boiling such ropes so as to give to their fibres a permanent tortuous springy character.—R. E.]

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31 Hase, Johannes Hubertus, *The Hague*—Manufacturer.

A cloak, muff, and ruffles, made from the feathers of the *Colymbus crystatus*.

Muff, made from the feathers of the marabou.

[Much value is attached to the plumage of the under-surface of the great crested grebe, a large water-bird distributed throughout the greater part of Europe, especially where there are extensive fens and lakes, and extending its range to parts of Asia, Africa, and North America. It is a swimmer, rarely flying or walking. It is the *Colymbus cristatus* of older, *Podiceps cristatus* of later, ornithologists. Among British birds it is the largest of our divers. The skin of the male bird is most valued.

Marabou feathers are the under-tail coverts of certain kinds of stork, especially *Ciconia argala* and *C. marabou*. They inhabit tropical Asia and Africa. The adjutant, or gigantic crane of India, is one of them, and furnishes the best feathers. The Marabou storks are scavengers; the Indian species stands six or seven feet high.—E. F.]

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32 Warnar, Willinck, *Amsterdam*—Manufacturer.

Wool velvet, in different colours, for furniture and carriages; known under the name of "Velours d'Utrecht."

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33 Vreede, Paulus & Hendrik, & Co., *Tilburg*—Manufacturers.

Twilled cloth, fine blue, called duffle; baize, fine red madder; and flat-baize.

Fine thin cloth, deep blue and black; also blue and red, called Spanish stripes, for exportation to India.

Flannel, twilled and flat; superfine, second and third qualities; and fine white flannel, called white dommets.

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34 Zaalberg, Jan Cornelis, & Son, *Leyden*—Manufacturers.

Blankets, for the markets of Holland, Belgium, Java, China, Japan, and France.

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35 Zuurdeeg, Jan, & Son, *Leyden*—Manufacturers.

Blankets of fine quality, made from Dutch wool, and of a fast colour; not artificially procured by sulphur.

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36 Wyk (Van) Brothers & Co., *Leyden*—Manufacturers.

Woollen coverlets with stripes of different colours.

White woollen knitting-yarn, which is said not to shrink; white knitting-yarn, different sorts; worsted knitting-yarn. Knitted-worsted stockings, in different qualities and sizes.

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37 Hoogeboom, Jacobus Johannes, & Son, *Leyden*—Manufacturers.

Blankets made of Dutch wool.

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38 Scheltema, Jacobus, & Janszoon, *Leyden*—Manufacturers.

Blankets of different thicknesses, for severe, moderate, and warm weather; made of Dutch wool.

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39 Theunissen, Jacobus, *Heppel*—Manufacturer.

Bed-tick, of linen thread, fine quality. Canvas, called "Meppeler everdoek."

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40 Koopmans, K., *Beverwyk*—Manufacturer.

Turkey-red cloth, dyed with Dutch madder.

[In the Class of the United Kingdom to which printed and dyed fabrics belong (Class 18), a note briefly describes this process of dyeing Turkey-red. Madder is the source of the colour; but its brilliance is greatly owing to certain points in the manipulation, and perhaps to certain qualities in the water, which are not often sufficiently attended to. Nor indeed can they ever have been said to be clearly defined.—R. E.]

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41 Alphen (Van), G., *Breda*—Manufacturer.

Carpets of cow-hair, speckled, red, and black; and green, black, and striped. Staircase carpet.

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42 Heukensfeldt, Ian, *Delft*—Manufacturer.

Carpets:—Velvet, new Brussels, and "under-table," or "crumb-cloths." The under-table carpets are principally used during dinner and supper, to preserve the carpets.

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43 Kroonenberg, W. F., *Director of the Royal Smyrna or Turkey Carpet Manufactory, Deventer.*

Carpets:—Deventer carpet, woven in one piece. The design is original; the wool produced and manufactured in Holland.

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44 Ven (Van de), Petrus Cornelis, *Boxtel*—Manufacturer.

Napkins and table-cloths of fine damask.

Napkins and table-cloths, damask, superfine.

Cloths for communion-tables, fine linen damask.

Napkins with representations of the arms of Holland and Wurtemberg; and Van Heeckeren and Wassender.

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45 Voort (Van der), H., *Boxtel*—Manufacturer.

Damask table-cloth and napkins, linen, with the arms of Great Britain.

Napkin, linen damask, with the arms of the Netherlands.

Napkin, linen damask, with the arms of Russia.

Table-cloth and napkins, linen damask, and superfine linen.

46 Geffen (Van), Johannes Hermanus, *Boxtel*—Manufacturer.

Napkins, table-cloth, and altar-cloth of linen damask.

Napkins and table-cloths of diaper linen. All manufactured of flax spun by hand.

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47 Galle, Peter Hilbert, *Kampen*—Manufacturer.

Table-cloth of linen damask, superfine. Napkins of linen damask, superfine.

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48 Travaglino, J. A., *Haarlem*—Manufacturer.

Boddice silk; coloured sewing silk; raw and coloured silk.

Gold cloth. Silver damask.

Black figured silk stuff, à la Jacquard. Satin de Chine. Gros de Naples.

Coloured, striped, and checked silk stuffs.

Silk lace. Ribbon. Bourdalour ribbon. Ribbon for military decorations. Knot ribbon. Neckcloths, or cravats.

49 ENTHOVEN (VAN), ARNOUT JACOBUS, *Empe, near Zutphen*—Proprietor.

Silk spun from the cocoons, white, yellow, and sea-green. Raw white and yellow Dutch silk, and imitation. Brussa silk (*soie grèce*).

Raw white and yellow silk, and woof silk (*trame*); the same, made from two threads of the silk-worm (*soie de deux fils du ver-à-soie*).

50 SWAAB, SAMUEL LEON, *The Hague*—Inventor.

Flax, partly prepared, without breaking and heckling. Dutch flax, first quality, for spinning, and entirely prepared. Hemp, half-prepared, for the manufacture of linen and its residue; and for cotton. "Cotton flax," from the residue of flax. "Cotton," from the residue of hemp.

51 KAISER, G. C. F., *Amsterdam*—Manufacturer.

Chamois gloves.

52 ROOYACKERS & SON, *Rotterdam*—Makers.

A pair of patent leather or "varnished" boots, the leg without seam. A Chinese boot. Boot, of which the leg and sole are without seam, and weighing about seven and a half ounces. Varnished boot, embellished with figures. Boots of vulcanized caoutchouc. Boots and shoes.

52A PILGER, LODEWIJK, *Amsterdam*—Manufacturer.

Two safes.

53 LAFEBER, ABRAHAM, *Gouda*—Manufacturer.

Twisted cotton reins, made by hand, for a set of four horses, in the English national colours; reins for one set of horses; cotton reins, white and black, round and flat.

Twisted halters of cotton, with rings, made by hand.

54 CATZ (VAN), J. B., *Gouda*—Manufacturer.

Yarn and rope for fishing. Log lines and drum cords from Dutch hemp.

Knitted reins, for two horses, from English cotton. Knitted reins, for one horse, from English cotton.

Fishing-net yarn, from Dutch hemp. Cording. Yarn for snipe nets, from Dutch flax.

55 POST & WENDT, *Gouda*—Manufacturers.

Whalebone whips and walking-canes.

56 OTTO, FRANC HEINRICH, *Amsterdam*—Maker.

Embroidery, representing an incident of Milton's youth, entirely worked in human hair, on white gros-de-Naples, in a frame.

57 COUCKE, CHARLES, *Rotterdam*—Manufacturer.

Lady's head-dress. Periwig of grey hair.

58 ROOYEN (VAN), HENDRIK, *Utrecht*—Designer.

Specimens of dyed silk, coloured with the newly-invented colouring matter—Polychromate, or chrysammic acid. All these colours are derived from the same substance, without any other colouring matter, merely by the application of different corrosive processes.

[A previous note explains that chrysammic acid is obtained from aloes. Its compounds appear capable of communicating several different colours of great brilliancy.—R. E.]

59 HONIG BREET, C. & F., *Zaandyk*—Manufacturers.

Samples of parchment, and double elephant paper.

60 HONIG, JACOB, & SON, *Zaandyk, near Amsterdam*—Manufacturers.

Specimens of parchment; double elephant, large square folio, imperial, crayon paper, &c.

Striped double elephant: elephant, imperial, super-royal, royal, large and small medium, medium post, Venetian, and various writing papers.

61 GELDER (VAN) & SONS, *Wormerveer*—Manufacturers.

Specimens of double purple and white paper (white inside and purple outside) for the use of sugar refiners, manufactured by machinery.

62 GIESBERS, T. M., *Roermond*—Manufacturer.

Iron fire-proof safes, in the form of escrutoires, painted black, with gilt ornaments, and secure and private locks.

63 MARTIN, E. C., *Zeyst, near Utrecht*—Manufacturer.

Queen's-ware stove, having in the front an open fire-place, and at the same time the air is heated from contact with the side and smoke flues.

Patent architectural ornaments, of a particular description of clay, not readily affected by the influence of weather. Capital. Console. Balustrade for a balcony.

Flower-vase suspender, made of clay, glazed on the inside. Large and small vases. Flower-pot.

Consoles and flower-vases intended to be suspended.

65 GRAAMANS, H. C., *Rotterdam*—Manufacturer.

Patent kitchen stove, and two hearths.

66 HESSELINK, WILLEM FREDERIK, *Gorssel, near Zutphen*—Proprietor.

A "seedlip" and a cradle.

67 LANDKROON, JAN, *Noordwold, near Dokkum*—Maker.

Baskets of willow or osier twigs; some painted with Frieslandish green (*Vriesch groen*). Exhibited for durability and cheapness.

68 DRAAISMA, DOUWE, *Deventer*—Manufacturer.

Porous pots of earthenware, used in galvanic apparatuses.

[The porous cells alluded to form an important part of several forms of the galvanic battery. In that of Daniell they are generally used of a circular form. The intention of their employment is to permit the passage of the electric current uninterrupted through the fluid, from within the cell to that surrounding it in which it is placed. In Grove's battery the porous cell is somewhat elliptical in outline. The form is merely a matter of convenience of arrangement.—R. E.]

69 LINDEN (VAN DER), ABRAHAM, *Rotterdam*—Manufacturer.

Cigars made of Dutch and East Indian tobacco.

70 BRANDON, NATHAN DIAS, *Amsterdam*—Manufacturer.

Stearine candles and tapers.

Lime soap.

Stearic acid; the same purified.

[Fatty matter, such as tallow, consists of several principles, among which are found margarine and stearine. The two latter are separated imperfectly from other principles by saponifying the tallow with lime. The "lime soap," thus obtained, is insoluble; and in order to obtain the fatty acids which have combined with it, it is decomposed by dilute sulphuric acid: a mixture of margaric and stearic acids can then be obtained from the mass.—R. E.]

71 **Perselaert, N., & Son**, *Maastricht*—Manufacturers.

Marseilles, Limburg, Japan, odoriferous and other soaps.

72 **Sondermeyer, Johannes Karel**, *Rotterdam*—Designer.

Ground or earth-borer, to promote the vegetation of fruit and other trees. This machine precludes the necessity of digging round the tree. The holes are bored at a distance of two feet from the stem, obliquely, towards the centre of the roots, one foot from each other, and one and a half foot deep, when they must be filled up with manure.

[The object of this implement is to secure a ready access of water to the roots of trees in dry weather, without breaking up the ground. It is capable of boring holes two feet from the stem, directed obliquely towards the centre, and one foot and a half deep; which holes being filled with manure, and pierced at the distance of a foot apart, will enable the cultivator to keep the earth always moist.—J. L.]

73 **Stam, Frederik**, *Bennebrock, near Haarlem*—Inventor and Manufacturer.

Liquid manure-machine, with arrangements to spread the manure.

74 **Jenken, W.**, *Utrecht*—Manufacturer.

A swing plough of Flemish construction; its share cuts out the furrow entirely, and leaves the bottom flat.

A turnip and carrot cutter of a new construction. This machine cuts one hectolitre, (which is twenty-two imperial gallons, or nearly a sack) in a minute.

75 **Van Vlissingen, Van Heel, & Derosne, Cail, & Co.**, *Amsterdam*—Manufacturers.

Sugar-cane mill, of improved construction.

The improvements made in the construction of this sugar-cane mill consist, 1st, in the manner in which the rolls are keyed upon their axes, which prevents them from loosening; 2dly, in the mode of fixing the holding-down bolts, used for tightening the upper roll, which are passed down through the wooden foundation, instead of being keyed into the frame itself. By this means the breaking of frames is greatly prevented, as, in case of anything of extra thickness getting between the rolls, the wood-sleepers of the foundation spring slightly. This sugar-cane mill is represented by a side elevation and plan in the accompanying cut.

76 **Enthoven, C. Lz.**, *The Hague*—Manufacturer and Inventor.

An iron crane, accurately weighing whilst lifting.

77 **Goossens, G.**, *F.S.A. of the Royal Manufactory of Percussion Caps, Delft*—Inventor.

A machine for the manufacture of percussion caps, extremely simple and double-acting. The moulds of these machines are of copper; nevertheless, five hundred thousand caps have been made with a single mould. The double-acting machine makes a perfectly-finished cap each half-turn; and produces, with the aid of a single adult and a boy, eight thousand caps an hour.

At one operation, these caps are loaded with fulminating-powder, pressed, covered with varnish, and exposed to dry. The maker of this machine is Jean Bar, armourer, at Delft.

78 **Petit & Fritsen**, *Aarlerixtel, near Helmond*—Bell-founders.

Cast bells for a chime, weighing about 2,500 kilogrammes, or 5,500 lbs., with a suspending apparatus.

79 **Enschede, Johannes, & Sons**, *Haarlem*—Letter-founders and Printers.

Printing types:—Great (double pica) Javanese character. Javanese assortment of cast types, consisting of 230 different types, and cast in eleven moulds. Small (Augustin, or great primer) Javanese character: an assortment of cast types, consisting of 175 different types, and cast in eleven moulds; the punches are engraved by the exhibitors from the models procured by Mr. T. Roorda, Professor at the Royal Academy at Delft. The matrices with which all these characters have been cast are rectified and adapted for moulds with fixed registers (*moules à registres fixès*).

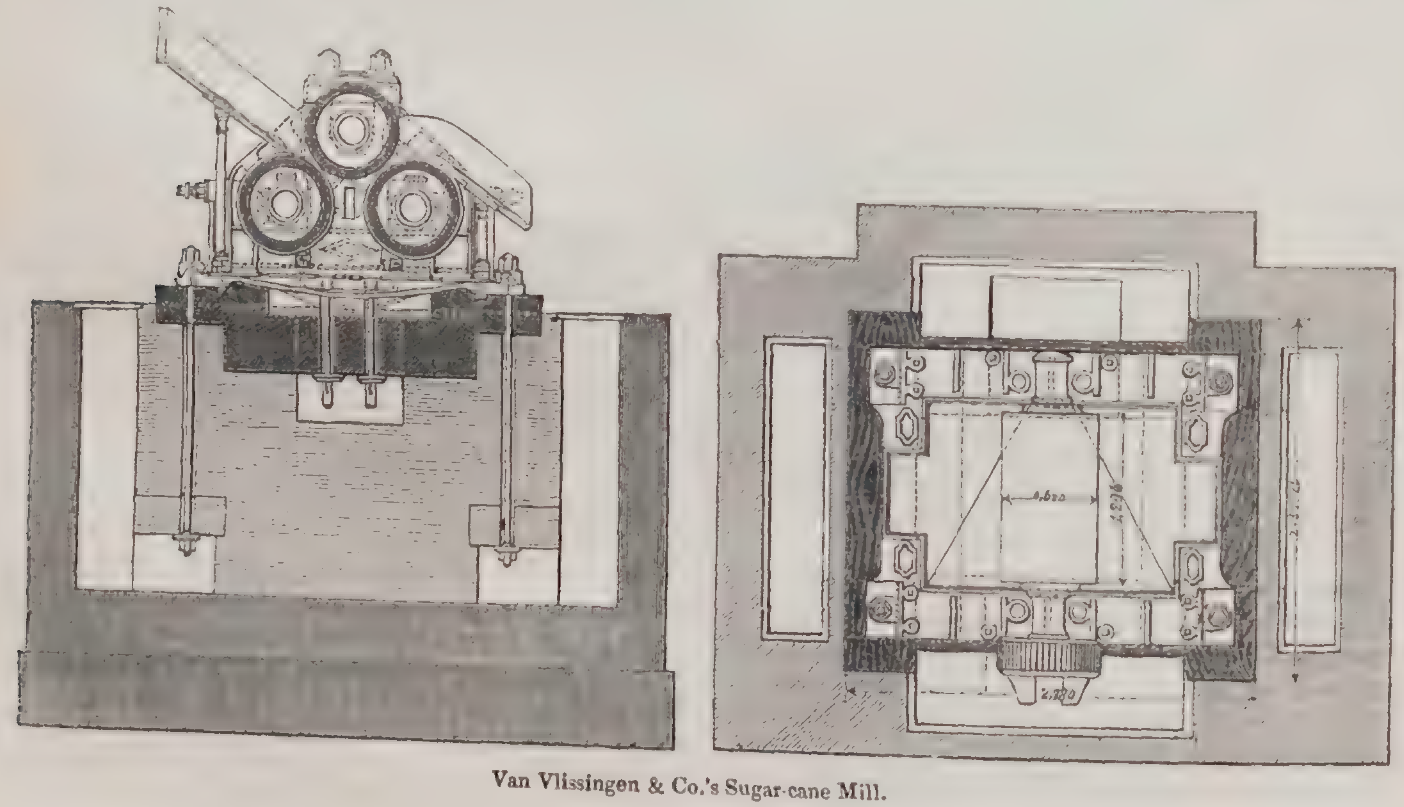
Stereotype plates, for printing quarto Bibles.

80 **Nering, Bogel, & Co.**, *Deventer*—Manufacturers.

Cast-iron flatting-roll, for calendering wool-velvet.

81 **Soeders, Gerrit**, *Moorsien, near Utrecht*—Inventor and Manufacturer.

A moveable or double-acting safety-axle for carriages, invented by the exhibitor in 1835, and since improved.



Van Vlissingen & Co.'s Sugar-cane Mill.

82 **Bosch, C. Gerrit**, *Amsterdam*—Inventor and Manufacturer.

A case containing copper less oxidizable than ordinary copper, applicable for shipping and other purposes.

83 **Becker, C.**, *Arnhem*—Mechanician.

A balance, with weights. Its knife-edge rests on agate planes. This balance will serve to determine weights up to seventy-seven grains nearly, and is said to turn with about the $\frac{3}{25000}$th part of a grain.

Another balance, the knife-edges resting flat, and the ends on agates; may be loaded with about 1,543 grains (upwards of three ounces troy) in each scale; and is said to turn with about $\frac{3}{2000}$th part of a grain.

Another balance, resting on three points upon agate planes, with 15,434 grains (upwards of $2\frac{2}{3}$ lbs. troy) in each scale, is said to turn with $\frac{1}{250}$th of a grain.

A levelling apparatus, simple in use, and its adjustments are easily verified.

[Very sensitive balances are not only very useful in delicate experiments, but are also employed in very many purposes of ordinary life. A high degree of sensibility seems to have been given to the above balances, as they ascertain the true weight to a very small fraction of the whole.—J. G.]

84 **Kaiser, A.**, *The Hague*—Manufacturer and Inventor.

Tydbewaarder (time-preserver), for the regulation of clocks, a simplified astronomical clock with some new arrangements. It has been examined by astronomers, by whose reports (published in the *Konst en Letterbode* of 1846, No. 18, and 1847, No. 14) the accuracy of this clock stands comparison with a good chronometer.

85 **Uhlman, Karel Wilhelm**, *Zwolle*—Inventor.

An equatorial sun-dial, of copper, with a moveable hour and minute-hand, compass, label, and nocturlabe, which may be pointed to any place; with mechanism by which a cannon may be discharged by means of a burning-glass.

86 **Hohwu, Andrew**, *Amsterdam*—Manufacturer.

An astronomical eight-day clock furnished with mercurial pendulum. A two-day chronometer and other articles.

[All the substances of which a pendulum rod can be made, increase in length with an increase of temperature, and a compensated pendulum is one with a contrivance which will compensate the effect of the expansion of the rod. The mercurial pendulum consists of a steel rod, to which is attached a cylinder of glass or iron filled nearly with mercury, the expansion of which on an increase of temperature is just so much more than that of the rod, that the point of the centre of oscillation of the pendulum is as much varied by the expansion of the mercury upwards, as the expansion of the rod lets it down. The final adjustment of mercurial pendulums is performed by trial and error, or by adding to or taking away mercury, as may be required—J. G.]

87 **Logeman, Willem Martinus**, *Haarlem*—Manufacturer; Mr. **Elias**, Inventor.

A large permanent steel magnet capable of lifting a weight of 500 lbs. Another capable of supporting a weight of 100 lbs.; and a third, capable of lifting a weight of 30 lbs. The constant power of these magnets is said to be more than double that which can be imparted to the same mass of steel by the usual methods. The peculiar process of their construction is an invention of Mr. Elias, of Haarlem.

A common mariner's compass, the compass needle of which is acquired by the process above cited.

Electro-magnetic engine, applicable to the decomposition of water; also for blasting mines at the distance of more than 300 feet, and adapted for the electric telegraph. The improvement in the construction consists in the inductors rotating, not near, but between the poles of the magnets. In this manner the magnets act more energetically upon the inductors, and a current of greater power is developed by the same amount of magnetical intensity.

[The loadstone, or natural magnet, was for a long time considered as the only body possessing the magnetic properties. It is an ore of iron, of a dark metallic grey colour. There are several different methods of making artificial magnets, or causing hard steel to possess all the qualities of attraction and repulsion, &c., of the natural magnets.—J. G.]

88 **Eder, S. T.**, *Rotterdam*—Manufacturer.

A clock.

89 **Cazaux, J.**, *Valkenburg, near Leyden*—Inventor and Proprietor.

A dynamostater, to be used as a dynamometer for ploughs, with a chronometric mediator or controller of the indications of the instrument affixed to it. By a slight modification this construction can be used as a dynamometer for measuring other varying strains. The machine consists of two levers fixed to an iron frame, which act on each other by a joint, under varying angles. To one of these levers is attached the plough-team, and on the other the counterpoise, which constitutes one of the factors for the measurement of the power, which changes its position as the strain augments, and is marked by ciphers on the iron section along which the lever moves. The chronometrical mediator of the indications of the machine consists of two watches, provided with second hands, one watch keeping its regular course, whilst the other, by an accelerating apparatus of the balance of the clockwork, runs faster in proportion to the rising of the lever; the velocity of the clockwork is so regulated that for every augmentation of the multiple of the counterpoise by one, the increase of velocity is two seconds per minute. The number of seconds which the watch with the accelerating apparatus runs per minute in the different positions of the lever, is marked in ciphers on the copper section along which the lever moves. In drawing a burden which encounters a variable resistance, such as a towed ship, or a sledge in a rope-yard, owing to changes in the hygrometric conditions of the atmosphere or of the soil, the ordinary spring dynamometers are not sufficient to procure the desired indications. Their sensibility also, in many cases, is not sufficient to show the alterations of straining which follow in quick succession; these alterations being indicated with accuracy by the dynamometer. The instrument was made by a common village blacksmith, according to the directions of the inventor. The axes were applied, and the clockwork executed by B. Van Beek, watchmaker, Leyden. The accelerating apparatus of the clockwork is also his invention.

[A dynamometer is an instrument intended to measure the muscular strength of man and animals, and a pretty good estimate may be formed of such by the use of the above machine.—J. G.]

Mechanical tuning-key for pianofortes, with a support for the joining-piece of the tuning-key; particularly adapted for an upright Brussels pianoforte. The object of this key is to insure greater accuracy when very slight alterations of pitch are required. The support being fixed in its proper place, the key is set on the peg, and the endless screw of the key is turned until the joining-piece comes opposite one of the support chinks; into which the moving part of the joining-piece is lowered. To suit differently formed pianofortes the support must have a different construction. Made by B. Van Beek, watchmaker, Leyden.

[Ordinary tuning-keys are generally formed in one piece of hard iron: in using them care must be taken to alter the pitch of the spring, only so much as is positively necessary; this, from various causes, is often no easy matter, and the present invention, if it can be turned to general account, will be at once appreciated by tuners.—H. E. D.]

90 Conrad, F. U., *The Hague, Engineer-in-Chief*—Inventor.

Model of a crane-bridge on the Dutch railway. The bridge is constructed over the river Schie, near Schiedam and Deefshaven, where the railway crosses the river at an angle of 87°. The name is literally correct, as the iron girders are nothing more than eight cranes, four on each side, corresponding to the four lines of rails, and so fastened together, that by the application of proper machinery to one side, the whole frame-work falls back in a line parallel with the pier, leaving a sufficient opening to allow a vessel fully rigged to pass between. The same machinery is used to bring the series of cranes together again, when a few bolts or catches suffice to retain them firmly in a position that trains may pass over.

[When railways cross rivers or canals navigable for masted craft, it either becomes necessary to make the bridges at such an elevation as will permit the vessels to pass beneath, or to construct them so that they may be opened. To make high bridges would, in many instances, be impossible without an excessive outlay. Swing, lifting, or rolling bridges are therefore in such cases indispensable.—S. C.]

Model of a rolling-bridge on the Dutch railway. This rolling-bridge is constructed over the old Rhine, a little beyond Leyden, where the railway crosses the river at an angle of 82°. The bridge is of timber, the piers consist of piles, and the abutments are brickwork, on pile foundations. The total length of the bridge is 170 feet; its width, 28 feet 6 inches; the span of the three middle arches 32 feet 10 inches, and the two extreme arches are 20 feet. One of these latter, which is intended for the navigation, is closed by two parallel platforms, which slide diagonally in opposite directions; when opening they are moved simultaneously by one man with very simple machinery. The cost of this bridge was 41,200 florins (about 3,433*l*. 6*s*. 8*d*.). The bridge was executed with the assistance of C. Outshoorn, resident engineer.

Shutting of sluice or dock-gates. This new contrivance is effected on the principle of a common water cock. It consists of a large turn-table placed at the bottom of the sluice, turning on a pivot and resting on a rotary disc. A large cylinder is fixed on this turn-table, having an opening in it of the same dimensions as the opening in the lock. When this tube is turned round a quarter of a circle, which can be done by the means of simple machinery, the sluice is closed, and by the reverse motion opened again. The closing or opening can equally be obtained by the pressure of the water itself.

91 Claasen, Peter Cornelius, *Amsterdam*—Inventor.

Model of a patent railway waggon, with an improved break.

Model of a patent railway, with a third line of rails, to prevent running off the line.

92 Maitland, Robert T., *The Hague*—Inventor.

Model of a self-acting preservative locomotive. A warning apparatus is propelled in front at a distance of about 140 yards, capable of being drawn in on approaching a station.

93 Vollenhoven (Van), C. Ioost, *Rotterdam*—Proprietor.

Models of a cutter, built for fast sailing; a long boat or launch, with a piece of cannonade; gig; yawl, and pinnace.

94 Wal (Van der), Klaas Symens, *Heeg, near Sneek*—Inventor.

Model of a water-mill with two screws.

95 Cuijpers, Johannes Franciscas, *The Hague*—Manufacturer.

Small pianoforte, of purple wood.

96 Zeegers, Frans, *Amsterdam*—Manufacturer.

A large folding screen, composed of eight partitions or doors, adorned with figures in relief, in Chinese or Japanese style, varnished and mounted, with engraved copper joints.

An elegant wooden fire-screen and round table, varnished in red lacquer, and painted in the same manner.

97 Horrix Brothers, Matthieu & Willem, *The Hague*—Manufacturers.

Ladder and staircase for libraries. From the manufactory called Anna Paulowna, established in 1800.

98 Schutz, Ludwig Wilhelm, *Zeijst, near Utrecht*—Designer and Manufacturer.

Specimens of zinc casting. Stag, embossed by Mr. Bauch, at Berlin; flower case; flower table; case for lamps; cases with flower-pots, &c.

Flower tables; flower case; and flower vases and baskets, in wood and twisted reed.

99 Regout, P., *Maestricht*—Manufacturer.

Two large chandeliers in cut crystal, supported by gilt metal, made for 16 gas lights. Two smaller chandeliers in cut crystal, supported by gilt metal, made for 58 gas lights of common size. A large vase of crystal. These crystal chandeliers and vase are represented in the accompanying Plate 46.

Glasses, assorted. Glass conduit pipes for gas and water, as employed at Maestricht.

100 Lurasco Brothers, *Amsterdam*—Manufacturers.

Bronze statues, representing M. A. de Ruyter, Prince William I., and Rembrandt van Ryn; all modelled by L. Royer.

101 Kempen (Van), Johannes Mattheus, *Utrecht*—Gold and Silver Work Manufacturer.

Nineteen articles in silver. This collection—a specimen of reproduction of the principal architectural styles, in their application to gold and silver works—is divided into five branches, representing the Grecian, Gothic, and Elizabethan styles, those of Louis XIV. and of Louis XV. With a pamphlet entitled, "On the Forms of Gold and Silver Works," relative to these articles.

102 Grebe, Jean G., *Rotterdam*—Silversmith.

A specimen of embossing, in the form of a beaker, which is made from a single piece of silver.

102a Heynsbergen (Van), William Jacob, *The Hague*—Manufacturer.

Show case of rosewood, containing military lacings as epaulettes, sword and shoulder knots, cords, scarfs, &c., the fashion of the Dutch army. Galloon, and gold and silver thread, for use in the Indies.

103 Lucardie, J. M., *Rotterdam*—Manufacturer.

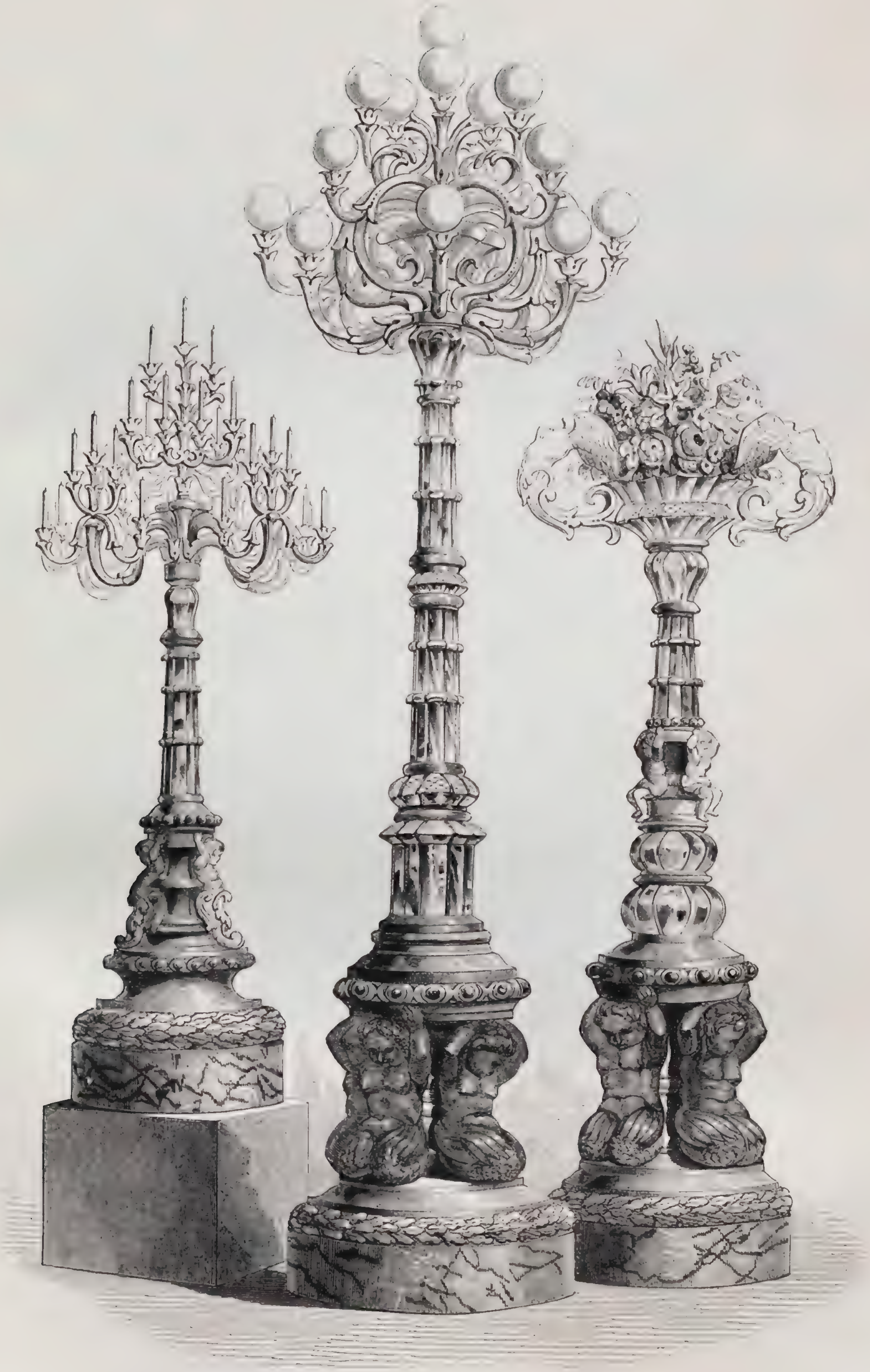
Silver ornamented tea kettle, with embossed figures.

104 Romain, Desire, *Rotterdam*—Manufacturer.

Corsage or pointe, made of diamonds and pearls, which may be divided in three parts.

105 Versnel, Jacobus Sebastianus, *Rotterdam*—Maker.

Flowers and butterflies, sculptured in Carrara marble, in different colours.



46. LARGE GLASS CANDELABRA AND FLOWER VASE. HOLLAND.

106 DIONISY, JAN MICHAEL, *Roermond*—Maker.

Cameos, among which is a figure of Her Majesty the Queen of England. Prints, from medals and stamps.

107 LEFEBRE, LOUIS JOSEPH, jun., *The Hague*—Designer and Maker.

Horn filled with artificial flowers in human hair, representing "The horn of plenty."

108 HESS, T. A., *Amsterdam*—Maker.

An artificial eye, intended to prove that objects are transferred directly, and not inverted on the retina.

[With reference to the apparatus here described, it is necessary to state that a simple experiment upon the eye itself of man or animals reveals the fact, that images are received invertedly upon the retina or sensitive membrane of the eye. It is not difficult so to prepare the eye of an animal as to afford the observer an opportunity of seeing exactly in what condition, as to erectness or inversion, the images of objects are depicted on the retina. From time immemorial, the question has always been proposed by philosophers, how it can be that objects are seen erect when their images are received in an inverted position by the retina? The correction is not a mechanical but a mental process, such at least is the generally received opinion; but as to its necessity few are at present disposed to question.—R. E.]

109 ENSCHEDE, JOHANNES, & SONS, *Haarlem*—Letter-founders and Printers.

Bibles in quarto and folio, for the use of the Dutch Reformed Church, printed for the Dutch Bible Company (*Nederlandsch Bybel-genootschap*), with stereotype plates.

110 NOORDENDORP, P. H., *The Hague*—Printer.

Specimens of Dutch printing, consisting of the following work:—"Journal de l'Ambassade extraordinaire de Son Excellence Mylord Comte de Portland en France, par rapport du cérémonial; with illustrations printed in the text by Ch. Rochusson." Of this work, only 25 copies were printed.

111 ZWEESAARDT, A., *Amsterdam*—Printer & Binder.

Two books, in quarto, viz., "Graduale Romanum" and "Anti-phonarium Romanum."

112 REGEER, H. J., *Rotterdam*—Bookbinder.

Works of Hogarth, in an elegant binding.

113 FOON, DR. H., *Amsterdam*—Inventor.

Specimens of transparent writing.

114 SAUERBIER, J. C., *Rotterdam*—Manufacturer.

A bracelet of diamonds, with a moveable rose and amethyst.

BELGIUM

North and South Areas, C. 71 to 74; D. E. 55 to 58; F. 55, 56; G. H. I. 55 to 57; J. 55, 56; K. 55 to 58; L. 55 to 57; M. N. 56, 57; O. P. 55 to 57; Q. R. 55; S. 55, 56.
North East Central Gallery, G. H. 49; I. 49 to 57.

The exhibited productions of Belgium furnish a very complete view, not only of the state of manufacturing industry and the industrial arts, but also of the materials operated upon. The latter, which include the first four Classes of the Exhibition, are contributed by not fewer than 115 exhibitors. They include mineral fuel of various kinds; metals and metalliferous ores, as zinc, lead, and iron; specimens of whet stones; and a variety of chemical preparations. The agriculture of this country is represented by contributions of hops, wheat, barley, &c., from East and West Flanders. Among the articles recognised as belonging to the Third Class are some specimens of Belgian tobacco in leaf, called "Wervicq." The chemical preparations alluded to include colours, glue, oils, dyes, &c. Flax in its different states of preparation for use is also exhibited. Raw silk of native growth has been sent, and is represented in different qualities. Among the machinery are many interesting and important contributions, constituting the largest, in point of size, forwarded by any foreign State. After examination of the magnificent engines exhibited on the British side, it is interesting to compare them with the same powerful machines here shown. Among these is a marine engine, of 140-horse power, and several locomotives, with railroad apparatus. The extraordinary results recently obtained by applying centrifugal force to the purification of sugar receive a valuable practical illustration in a patent engine exhibited, which produces this effect upon sugar in the loaf. The sugar is rendered perfectly white, and free from impurity, by this apparatus. Machines employed in textile manufactures, carriages, and agricultural implements, form likewise an interesting feature in this collection. The display of fire-arms is large, and includes, among others, the "needle" gun, presumed to have great precision in use. The musical instruments, philosophical apparatus, &c., also should receive notice. A large number of exhibitors appear as representatives of textile productions in Belgium; the linen manufacture naturally assuming the chief prominence. From Brussels, as might be expected, a beautiful collection of the finest and most costly lace has been sent. The lace manufactures of other towns are also represented. Some of the beautiful Savonnerie carpets are also exhibited. In glass, china, and mineral manufactures, the specimens exhibited indicate the present state of those arts in Belgium. In furniture, the articles exhibited are principally of a small size. A large number of miscellaneous objects give variety and extent to this collection. The sculptures, many of which are placed in the main avenue, will be regarded with much interest. Upwards of 500 exhibitors appear, on the whole, as the representatives of Belgium at the Exhibition.—R. E.

1 **Guillaume, Jean Antonio**, *Bovigny, Luxembourg.* (Agent, Mme. Hulme, 3 Duke Street, Bloomsbury Square.)
Samples of hones.

2 **Otte, Charles Joseph**, *Vielsalm, Luxembourg.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Samples of hones, rough and prepared.

3 **Lamberty, Christophe**, *Vielsalm, Luxembourg.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Samples of hones.

4 **Offergeld, Pierre Joseph**, *Vialsalm, Luxembourg.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of whet-stones.

[The hones of Belgium are good and well known. A considerable variety is obtained from the slaty rocks of the Luxembourg, available for many purposes. Most of the whet-stones of commerce are silicates of alumina, obtained from metamorphic rocks. They are of great hardness, of light green colour, slaty fracture, and generally associated with clay slates.—D. T. A.]

5 **Colette-Doucet, F. J.**, *Bertrix, Luxembourg.*
Specimens of slate-pencils, whet-stones, and roof-slating

6 **Société des Hauts Fourneaux de Pommerœul**, *Hainault.*
Specimens of pig iron, Nos. 1, 2, 3, 4.
Specimens of bar iron, grey, mottled, and white.

7 Société de la Nouvelle-Montagne, *Verviers.*

Specimens of grey oxide of zinc, and zinc tiles for roofing.

Specimens of roofing with zinc tiles. Sheet-zinc, for dressing paper. Condensed sheet-zinc, adapted for engraving.

Sheet-zinc, for ship-sheathing. Pig-lead.

8 De St. Hubert, Ed. *Bouvignes, Namur.* (Agent, M. J. Whestorp, 9 George Yard, Lombard Street.)

Upper and nether mill-stones. Pieces of stone, as samples of the same.

9 Morimont, Jean Baptiste, *Wierde, Namur.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Pair of mill-stones, for grinding corn.

[Belgium is rich in mill-stones of fair quality, obtained generally from the grits of the older geological period, associated with coal and with the limestone of similar or rather older date. They are not, however, equal in quality to the French *buhr-stones.*—D. T. A.]

10 Fallon-Piron, Jean Baptiste, *Namur.*

Block of black marble.

[The black marble of Belgium exists in vast quantities, and is well adapted for various ornamental purposes. It may be obtained of large size and of very low price. The quality of the marble may be seen in various specimens exhibited both in a rough and partly polished state, and finished articles of furniture.—D. T. A.]

11 Eloin, Felix, *Namur*—Mining Engineer.

Specimens of safety-lamps, large and small patterns.

Apparatus for introducing air into the lamp, and distributing it around the flame.

Key for shutting the lamps, and specimens of wicks.

12 Tombelle-Lomba, E., *Bonneville, Namur.*

Belgian kaolin, or China clay, for the manufacture of fine porcelain, for dressing paper, and for the manufacture of blue.

Black earth, of first quality, for the manufacture of crucibles, fire-proof bricks, &c.

The same, of second quality, for the manufacture of pottery, or delft ware.

13 Petit, Ferdinand, & Co., *Auvelais, Namur.*

Specimens of coals for manufactures, steam-engines, and domestic use.

[The Namur coal is obtained from the eastern or Liege division of the Belgian coal district; the area of supply, including nearly 6,000 acres in the province of Namur, and upwards of 100,000 in that of Liege. Most of the coal is used in the neighbourhood in the various manufactures for which Namur is celebrated. The quality is moderately good.—D. T. A.]

14 De Gaiffier d'Hestroy, Baron, *Mallien, Namur.*

Samples of China clay.

15 De Ferrare, F. & L., *Wierde, Namur.*

Plastic earth, for gas-pipes, crucibles, glass-house pots, and fire-proof bricks.

16 Desmanet de Biesme, Viscount, *Golzinne, Namur.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Black polished marble pilaster.

Four slabs of black polished marble.

17 La Société de Vedrin, *Namur.*

Specimens of pyrites (bisulphuret of iron).

Specimens of galena (sulphuret of lead).

Specimens of lead from the metallic ore of the Vedrin mine.

18 Perard & Mineur, *Couvin, Rouillon, and Liege*—Iron-masters. (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of iron ore; pig-iron; bar-iron, first casting; strong charcoal bar-iron, for gun-barrels and hardware; puddled bar-iron, for fire-arms.

Specimens of square iron, set cold and hammered; horse-shoes, forged cold; piece of a horse-shoe, bent cold; malleable cast-iron; charcoal iron, for gun-barrels, fully tested; charcoal puddled cast-iron.

[Most of the iron of Belgium is of excellent quality, and although much more costly than that of England, comes next to our own in real importance. The specimens sent for exhibition are worthy of examination as good examples of the qualities thought necessary on the Continent for the construction of gun-barrels.—D. T. A.]

19 Dethier, Aristide, *Theux, Liege.*

Specimen of black marble, unpolished; slab of the same marble, partly polished; vases of the same marble, polished.

Specimen of ferruginous zinc ore; specimen of rough zinc from the ore.

20 Behr, F. L., *Seraing, Liege*—Director of the Société de l'Espérance.

Specimens of bar iron, for the manufacture of steel; and of pig iron No. 1; both produced from coke in the cold air.

21 Brixhe, Emile, for the Société de Corphalie, *Antheist, Liege.*

Galena; zinc ore; blende, with galena; galena, with carbonate of lead; pig lead; sheet-zinc; specimens of zinc nails, for roofing and ship-sheathing; grey oxide of zinc, for paint.

22 Compagnie des Mines et Fonderies du Bleyberg, *Montzen, Liege.*

Specimens of galena, blende, galena and blende mixed, in rough ore; galena and blende, in various states of preparation, from the ore to the powder; pig-lead, made from the galena of Bleyberg.

23 De Hansez, *Theux, Liege.*

Specimens of iron ore.

24 Mueseler, Mathieu-Louis, *Liege*—Mining Engineer.

Safety-lamp, invented by the exhibitor, and used in the mines of Belgium.

Improved safety-lamp, of the same kind. The improvement consists in the division of the smoke-consuming chimney into several compartments, by means of partitions.

[The Mueseler safety lamp has for some time been extensively employed in the Belgian coal mines, and has been described by the Government Inspectors of Mines in that country as the most effectual modification of the Davy lamp. The flame is enclosed within a thick glass, covered by a metallic gauge. The air required for combustion enters through the gauge and descends the glass, while the products of combustion ascend through a sheet iron tube surmounting the flame. The upper part of the lamp is defended in the ordinary way and a cage forms a further safeguard. The chief advantage arises from the glass and cage, the former of which is liable to be broken either by water or an explosion within the lamp. The principal advantage is the greatly increased weight. When clean and whole it gives more light, and is safer than the Davy. In case of use in dangerous places, and when dirty it is probably inferior.—D. T. A.]

25 Lamberty Brothers, *Stavelot, Liege.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Seventy specimens of hones, of different sizes and qualities.

Two specimens of whet-stones, for scythes.

26 Société des Mines et Fonderies de Zinc de la Vielle Montagne, *Liege.* (Agent, H. F. Schmoll, 12 Manchester Buildings, Westminster.)

Raw ore, in the piece, and washed. Ore, calcined and ground. Ore and charcoal, mixed for the furnaces.

Raw zinc. Sheet zinc of all kinds, for roofing, ship's sheathing, paper-dressing, household utensils, tin-smith's work, &c. Bars, for ship nails. Drawn zinc, for nails of all kinds. Brass.

An assortment of chemical compounds, made of zinc. Grey oxide, for paint. Cement, for boilers.

[The Vielle Montagne Mining Company has long been known as working large quantities of the common zinc ore of Belgium (calamine), and introducing the metal into this country at rates which render the working of blende (or sulphuret of zinc) of England not profitable. The zinc is used for many purposes, as well directly to replace lead and tiles in roofing and covering buildings, &c., as indirectly to supersede partly the white lead of commerce by the oxide of zinc prepared for this in a particular way. Zinc has very much more tenacity than lead, and is very much lighter for roof work than slate, tiles, or lead. The zinc made by the Vielle Montagne Company is extremely pure, containing only a little iron and some traces of lead and sulphur.—D. T. A.]

27 Société des Hauts Fourneaux, *Chatelineau, Hainault.*

Specimen of lump coal, for the use of common forges and steam-engines. Specimen of coal, principally adapted for steam-engines.

28 Compagnie du Charbonnage de Pont-de-Loup-Sud, *Pont-de-Loup, Hainault.*

Bituminous coal, for domestic use, steam-engines, &c. Dry bituminous coal, for burning bricks and limestone.

29 Compagnie du Charbonnage de Boubier (L. J. Maulaz & Co.), *Châtelet, Hainault.*

Cannel coal, for steam-engines, domestic use, &c. The small coal is adapted for the manufacture of swords and fire-arms, hardware, and chemical products. Bituminous coal, for steam-engines, domestic purposes, laundries, breweries, &c.

30 Delcourt, Antoine, for the Société Charbonnière du Poirier, *Montigny-sur-Sambre, Hainault.*

Specimen of bituminous pit-coal, for the manufacture of coke.

31 Quinet, Sylvain, *Gilly, near Charleroi*—Director of the Coal Mines of Trieukaisin, Deux-Forêts, and Combles.

Bituminous coal, of superior quality, adapted for the forging of metals, and the manufacture of coke for metallurgic operations. Semi-bituminous coal, of good quality. Semi-bituminous coal, of superior quality, adapted for puddling cast-iron, rolling-mills, iron-works, wire-works, &c. Similar coal, adapted for flatting-mills, distilleries, sugar-refiners, glass-makers, &c.

32 Wautelet, J., for the Charbonnage d'Oignies-Aiseau, *Charleroi.*

Specimens of semi-bituminous coal, adapted for drying-houses and domestic fuel.

[The Hainault coal occupies a surface of upwards of 200,000 English acres, and includes, as will be seen, both bituminous and anthracite kinds. There are, in all, 114 different seams in the district, the greatest expansion of which, near Charleroi, is of great industrial interest. There are three distinct kinds of coal, viz., 1st, the upper or Henu coal, which burns easily and rapidly, with much flame and smoke, and is adapted for steam-boilers; 2nd, the middle or bituminous coal, well adapted for coking and for the forge, and also for domestic purposes; and 3rd, the lower or anthracitic coal—friable, contains little bitumen, but burns with much heat and very slowly. The workings for coal in the Mons district are carried on at considerable depth, the upper beds being 1,000 feet deep.—D. T. A.]

33 De Rasse, Albert, for the Société des Mines de Rouveroy, *Mons.*

Specimens of copper ore and metal.

34 Société Pire-et-Violette, *Chartreuse-lez-Liège.*

Samples of coals.

35 Wouvermans, Josse, sen., *Molenbeek-St.-Jean, Brabant.*

Several specimens of varnish, and of its polishing effects. Specimens of azure-blue and mineral-blue.

36 Vloeberghs, —, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of lacquers and dyes.

37 Cappellemans, J. B., sen., Deby, & Co., *Brussels.*

Collection of chemical products. Collection of sheets of glass for windows, of all sizes. Collection of bottles of every description, large and small.

38 Société de Floreffe, *Floreffe, Namur.*

Specimens of anhydrous sulphate of soda; anhydrous carbonate of soda; salt of soda, a combination of the preceding; impure caustic soda, and crystals of carbonate of soda.

[The rock salt of commerce, and granular salt, which consist chemically of chloride of sodium, are the prime sources of this valuable chemical product. Formerly, both soda and potash were obtained by burning sea-weed. Soda of commerce is now prepared from salt, by mixing the latter with sulphuric acid, so as to form a sulphate of soda, in a reverberating furnace. The sulphate of soda, or saltcake, is decomposed by chalk and ground coal, which are mixed with it, and is then exposed to a high temperature. The mass is afterwards washed, and the solution purified and crystallized. Carbonate of soda is formed by heating the impure alkali with sawdust, or other carbonaceous matters, washing the residue, and crystallizing. By an ingenious combination of processes, muriatic acid, and bleaching powder, commonly called chloride of lime, are made also in alkali works. Some of these establishments are among the most extensive of any concerned in the industrial arts. The crystallizing houses, in connection with manufactories of this description in Great Britain, present a wonderful and interesting spectacle in the long rows of pans and masses and crystallized alkali which are arranged in order throughout their extent.—R. E.]

39 Debbaudt Brothers, *Courtrai.*
Specimens of ceruse, or white lead. Cakes of the same.

40 Société des Charbonnages et Hauts Fourneaux d'Ougrée, *Ougrée, Liege.*
Specimens of metallic colours for painting on wood and metals, consisting of a mixture of zinc and lead, or of their oxides.

41 Colders, Van Roy, *Antwerp.*
Stucco, or plaster, a preservative from damp. Tiles, called "Sarangousty," of a composition intended to prevent the action of damp from old walls, stables, &c. Paper, manufactured for the same purpose.

42 Brasseur, Eugene, *Ghent.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of ceruse, or white lead.

43 Heerinckx, François, *Uccle, Brabant.*
Specimens of rye.

44 Vanden Borre, Jean, *Uccle, Brabant.*
Specimens of winter wheat.

45 Vander Elst, François, *Uccle, Brabant.*
Specimens of corn.

46 Verheyden, Egide, *Dilbecq, Brabant.*
Specimens of red winter wheat and winter rye.

47 Legras, Adolphe, *Nederoverheembeek, Brabant.*
Specimens of winter wheat, rye, and barley.

48 D'Huard, Baron, *Villermont, Luxembourg.*
Specimens of oats, horse-beans, and buck-wheat.

49 Van Ophem, *Uccle, Brabant.*
Specimens of buck-wheat and winter barley.

50 Peemans, Henri (Widow), *Corbeek-Loo, Brabant.*
Specimens of white winter wheat.

51 D'Hollander, Jacques, *Moerzeke, East Flanders.*
Specimen of red wheat (crop 1850).

52 Vanden Abeele, Leonard, *Appels, East Flanders.*
Specimens of grass (crop 1850).

53 Perdicus, J., *Herent, Brabant.*
Specimens of red winter wheat.

54 Minten, Antoine, *Louvain.*
Specimens of red winter wheat.

55 Mertens, Baron, *Ostin, Namur.*
Specimens of wheat, barley, rye, oats, and vetches.

56 Coosemans, Michel, *Kesseloo, Brabant.*
Specimens of red winter wheat.

57 De Mulder, —, *Poesele, East Flanders.*
Specimens of wheat.

58 De Mathelin, —, *Messancy, Luxembourg.*
Specimens of wheat, rye, and barley.

59 Vyvens, Edward, *Huysse, East Flanders.*
Specimens of red wheat.

60 Stobbelaers, —, *Moerzeke, East Flanders.*
Specimens of white wheat, red wheat, and rye; all of crop 1850.

61 Colle, —, *Lootenhulle, East Flanders.*
Specimens of wheat.

62 De Heunheuse, —, *Aye, Luxembourg.*
Specimen of spelt, a species of wheat.

63 Degryse, Louis, *Poperinghe, West Flanders.*
Specimens of hops, and of blue and white peas.

64 Dequidt, L. (Widow), *Poperinghe, West Flanders.*
Specimens of hops.

65 Van Meries, Madame, *Poperinghe, West Flanders.*
Specimens of hops.

66 Delbaere, Madame, *Poperinghe, West Flanders.*
Specimens of white winter wheat.

67 Fontaine, Gustave, *Brussels.*
Specimen of solidified milk, designed for the use of the navy.

68 Docquir, P. J., & Parys, *St.-Josse-ten-Noode, Brabant.*
Specimens of potato-flour, bolted and unbolted.
Specimens of animal-black, in coarse and fine grain, and in powder.

69 Clavareau Brothers, *Dinant.*
Specimens of vegetable produce.

70 Billiard, Henri, *Menin.*
Specimens of tobacco in raw leaf, used chiefly for fermentation. It is employed instead of snuff.

71 Plaideau, —, *Menin.*
Specimens of snuff, of various qualities, including St. Vincent, Virginia, civet, Paris, Lille, Dutch, Tonka, Dunkirk, impalpable, &c.
Specimens of tobacco, of different kinds, including Porto-Rico, Menin, Polish, Maryland, Wervick, English, &c.
Specimens of roll tobacco, of different kinds.

72 Brovellio, J. B., & Co., *Menin.*
Specimens of snuff, including Macouba, Paris, civet, Robillard, St. Vincent, impalpable, &c.
Specimens of tobacco, including Menin, Wervick, Varinas, Maryland, &c.
Tobacco in rolls, and sanitary snuff.

73 Bocken, Hubert, & Co.
Specimens of blue and white starch.

74 Van Bunnen, Cl., Madame, *Bruges.*
Specimens of potato-flour, bolted and unbolted.

75 Peers, Ernest, The Chevalier, *Oostcamp, West Flanders.*
Specimens of forty-eight species of wheat, including those of Mont d'Or, Bengal, Erret, Oxford, Rham, Heidelberg, Bessarabia, Pomerania, Taganrock, Marianopolis, Scotland, St. Helena, Holstein, Hautes-Alpes, Odessa, Dantzic, &c.
Specimens of rye, common and Roman; of summer barley; and of buck-wheat, common and Campine.

76 Beheyt, —, *Rumbeke, West Flanders.*
Specimens of barley, rye, harico-beans, red and white wheat, winter oats, and buck-wheat.

77 Willems, —, *Hasselt.*
Specimens of wheat, rye, spelt, barley, oats, and buck-wheat; crops of 1850.

78 Blyckaerts, Gustave, *Tirlemont.*
Specimen of potato-flour.

79 Verschaeve, Louis, *Ypres*.
Specimen of native tobacco.

80 Lahousse, Albert, *Wervicq*.
Specimen of native tobacco.

81 Claus & Caron, *Ghent*. (London Agents, Van Notten & Co.)
Specimens of candied sugar, of various qualities and colours; and of manufactured sugars, including crushed and lump, and for exportation.

Patent lump sugar, crystallized, and manufactured by new processes.

82 Vercauteren, Jean-Leon, *Zele, East Flanders*.
Specimens of native linseed.

83 Roels & Co., *Lokeren*.
Specimens of prepared flax, from Lokeren, Mechlin, and St. Nicholas.

84 Vandestraeten, Felix, *Brussels*.
Specimen of oil of colza, in its natural state. The same, purified for lamps. Purified linseed oil, for paint.

85 Claude, Louis, *Brussels*.
Oil of colza, purified for the use of the lamps called Carcel, Moderator, &c.

86 De Mevius, Charles, *Forest, Brabant*.
Specimens of raw silk, of floss and spun silk, and of the cocoons from which the silk was drawn.

87 Bisse, Louis-Emile, *Anderlecht, Brabant*.
Specimens of very pure oleine, from neats' and sheeps' feet, adapted for fine watch-work.

Pure animal oleine, from horse-fat, adapted for large clock-work, for fire-arms, and the manufacture and lubrication of machinery.

The same, purified by a new chemical process.

Pure vegetable oleine, from vegetable oil chemically purified, adapted for lubricating locomotives and other railway machines.

Pure vegetable oleine, exhibited as a specimen of purification by the new process.

88 Leclercq, François, *Longchamp, Namur*.
Specimens of flax, steeped, peeled, and refined.

89 Jobart-Aubreby, *Dinant*.
Specimens of glue.

90 Degraeve-Delforterie, *Gheluwe, West Flanders*.
Specimens of peeled flax, whitened, and of green flax.

91 Vercruysse, Henri & Dominique, *Courtrai*.
Specimens of oil of colza, common extract; of the same purified for lamps; and of the same for carcel lamps.

93 Bihet, Hubert, *Huy*.
Specimens of glue.

94 Hansotte-Delloye H. G., *Huy*.
Specimens of glue.

95 Bortier, Pierre, *Adinkerke, West Flanders*.
Specimens of mineral manure: natural shells reduced to powder; the same calcined to a dark red; the same, impregnated with sea-water, and reduced to fine powder. Lime from shells; the same slacked with sea-water.

96 Laviolette, De Moor, *Bruges*.
Peeled flax, steeped green, from the district of Bruges, crop 1850. English mark IV.

97 Strubbe & Bacey, *Bruges*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of oak bark, called "Poperinghe twigs."

Specimens of oak bark from young trees in the environs of Bruges, called "Young tree bark."

98 David & De Boe, *Antwerp*.
Specimens of peeled flax.

99 Briers, Jos. sen. *Antwerp*.
Specimens of glue, manufactured by steam.

100 Reusens, Pierre-François, *Antwerp*.
Specimens of copal varnish, for carriages and house decoration.

101 Vanderschrieck Brothers, *Antwerp*.
Specimens of artificial wool.

102 Verhelst, François, *Grembergen, East Flanders*.
Samples of raw hemp, crop 1850; and of peeled hemp from the same.

103 Van-Riet, Pierre Jean, *Moerzeke, East Flanders*.
Samples of raw hemp, crop 1850.

104 Desmedt & Co. *Zele, East Flanders*.
Samples of peeled flax; and of flax dried with linseed, crop 1850.

105 Gilta, Jean Lambert, *Appels, East Flanders*.
Samples of raw hemp, grown in 1850.

106 Van Hoey, Simon Pierre, *Hamme, East Flanders*.
Specimens of peeled flax.

107 Vanbogaert, Joseph Benoit, *Grembergen, East Flanders*.
Specimens of peeled flax and hemp, crop 1850.

108 Verstraeten, Emile, *Ghent*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of animal black.

109 Soenens, Edward, the Chevalier, *Swynaerde, East Flanders*.
Fleeces of raw wool, produced from sheep raised at the Agricultural Exhibition of 1841, at Swynaerde-lez-Gand. Yarn from the same wool combed. Specimens of the same wool spun by hand.

110 Seghers, Bernard, *Ghent*. (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of animal black.

111 Depotter, Amand, *Audenarde*.
Skeins of raw silk; cocoons; specimens of colza, covered with cocoons.

112 De Coninck, Auguste, *Ghent*.
Specimens of white and yellow cocoons of the Chinese race, produced in the silk factory at St. Denis Westremlez-Gand. Specimens of the skeins of these cocoons, and of the thread and ribbons of the same.

113 Verbeeck, Philippe-Jacques, *Grembergen, East Flanders*.
Specimens of dried flax with linseed; and of very fine peeled flax, crop 1850.

114 Van Wiele, Jean-Baptiste, *Grembergen, East Flanders*.
Specimens of flax steeped in stagnant water, crop 1850; of the same peeled; and of yarn of the same.

115 D'HAESE, BENOIT, *Zele, East Flanders.*

Specimens of flax steeped in stagnant water, crop 1850; and of the same dried with linseed.

116 DEMAN, PIERRE, *St.-Josse-ten-Noode, Brabant.*

Specimen of carriage, called a "Cab-phaeton."

117 MOUTHUY, ALBERT, *Brussels.*

Specimens of engine-straps.

118 JONES BROTHERS, *Brussels.*

Specimens of carriages—a double calash; cab phaeton, with steel before and behind; brack for ponies; buggy, manufactured for Bombay, Calcutta, and Batavia.

119 COCKERILL, JOHN, *Seraing, Liege.*

Specimens of grey pig-iron, grey bar-iron, and white bar-iron.

Specimens of puddled iron prepared for various purposes, hammered, hardened, and made into steel. Piece of an axle-tree for waggons. Bar of iron for the tires of railway carriage wheels, &c.

An expansive and condensing steam-engine of 140-horse power, adapted for vessels having moveable paddle-wheels for the navigation of a river with strong and shallow currents.

A locomotive engine, with jointed carriage, for heavy trains to run on railway curves of small radius. Diameter of cylinder 16 ins., stroke of piston 24 ins.

A high-pressure steam-engine of 16-horse power, with vertical cylinder, adapted for manufacturing purposes.

A small high-pressure engine, 3-horse power, with tubular boiler, for watering gardens and conservatories. Diameter of cylinder 4¾ ins., stroke of piston 12 ins.

Model, one-fourth of the real size, of a machine for facilitating, without danger or trouble, the ascent and descent of miners. Diameter of cylinder 18 ins., stroke in ascent and descent 13¼ feet.

120 SOCIÉTÉ DES HAUTS FOURNEAUX, USINES ET CHARBONNAGES DE MARCINELLE ET COUILLET, *Couillet, Hainault.*

A railway locomotive engine and tender. Diameter of the cylinders 16 ins., stroke of piston 24 ins; diameter of the six coupled wheels each 3 feet 9 ins.

Ventilator for mines, workshops, theatres, &c., constructed on the system of Fabry.

A pair of cylinders for locomotive engines, in the rough cast state as they came from the foundry.

Specimens of semi-bituminous coal, used for domestic purposes, engine-boilers, forges, &c.

Specimens of rails, tires for locomotive wheels, bars of iron, sheet-iron, iron sleepers for railways, round bar-iron for fluted cylinders, and nails of ten different countries.

121 VAN AKEN, CORNEILLE-BENOIT, *Antwerp.*

A four-wheeled carriage.

122 VAN AKEN, P., & SON, *Antwerp.*

A carriage, called "Cabriolet chaise."

123 JOUVE, LOUIS, *Molenbeek-St.-Jean, Brabant.*

Patent double fire and safety ladder.

Patent circular frame, for knitting articles in wool, flax, cotton, and silk.

Patent forcing and suction pump.

124 VAN GOETHEM, VICTOR, *Lembecq, Brabant.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Patent centrifugal apparatus, for purifying and whitening lump sugar.

Patent centrifugal apparatus, with two alternate drums, for purifying raw sugar, &c. Similar machine with one drum.

125 HOUYET, AUGUSTE, *Brussels.*

Models of machines for cleansing and purifying rice and barley; of an aerating mill; of a machine for peeling raw coffee; and of a steam chimney, with interior tube to apply the heat of the discharged steam to warming the injection water of the boilers.

Preserved articles of food for exportation, viz., rice, Italian pastes, semola, ground and pearl barley, starch, sea biscuits, &c.

126 VANDEVIN, FERD., *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Patent weaving machine.

127 KESSELS, HERMAN, *Brussels.*

Patent machine for moulding 20,000 bricks per day.

Model of safety-machine.

128 TROUPIN BROTHERS, *Verviers.*

A shearing finishing-machine.

129 FETU & DELIEGE, *Liege.*

Specimens of cards for spinning wool and cotton.

130 HOUTTHAEVE-STRAGIERS, —, *Roulers.*

Specimens of metallic combs and plates, for weaving.

131 DEBEAUNE, ULRIC, *Antwerp.* (Agents, Poole & Carpmael, 4 Old Square, Lincoln's Inn.)

Patent moistening machine, for all kinds of corn and seeds.

Patent cooling accelerator, for the grinding of corn.

Patent atmospheric regulator, for purifying the air of rooms, and assisting the draught of chimneys and ventilators, &c.

132 MERTEN, CHARLES, *Gheel, Antwerp.*

Patent parallel iron vice, in various sizes.

133 VAN MIERLO, ADRIEN, sen., *Antwerp.*

Machines, invented by the exhibitor, for making combs, for grinding cocoa, for weaving fringes, and for weaving laces.

134 SOCIÉTÉ DU PHÉNIX, *Ghent.* (M. Bruggeman, Engineer and Inventor.)

Knitting-frame, with new motion by the exhibitor; and helicoid thrashing-machine.

135 GOUDEAU, CHARLES, *Alost.*

Apparatus, invented by the exhibitor, designed to replace the present method of fixing the yarn, and of weaving by the treddles. This apparatus is constructed for plain and figured fabrics, diaper and damasked linen, with small harness for making satin.

136 ZAMAN & Co., *St.-Josse-ten-Noode, Brabant.*

Specimens of pavement from Quenast, and of polished porphyry.

137 VAN ESSCHEN, NAPOLEON-GUILLAUME, *Molenbeek-St.-Jean, Brabant.*

Model of a patent iron bridge, size 40 feet long and 3½ feet wide; designed to support a load of 17,000 lbs.

Specimens of tubes made of sheet-iron, for bridges and tunnels.

138 SIOEN, JOSEPH, *Ghent.*

Specimens of laths, made of the brown oak of Belgium, for ceilings.

Specimen of a trunk of an oak tree, divided into laths.

139 JANSEN, ADOLPHE, *Brussels.*

Specimens of double-barrelled guns. Guns of various calibres, with barrels by Bernard and Leclerc.

Double-barrelled carbines, with barrels of cast-steel, and

Leclerc's without soldering; for conical-pointed ball. Single-barrelled carbines, of same construction.

Several pairs of pistols, in cases, with barrels of cast-steel.

Ornamented Turkish sabre, with damask blade.

Cutlas, with damask blade. Hanger, in incrusted steel.

Patent pistol, for shooting without powder.

Patent index-target, for the use of pistol practice, showing by numbers how it has been touched by the balls. The same smaller size, for gallery practice.

140 Henrard, M. J., *Namur.*

Patent percussion rifle.

141 Renkin Brothers, *Liege.*—Manufacturer.

Collection of single and double-barrelled percussion fowling pieces; single-barrelled flint guns for the colonies and coast of Africa; muskets of different prices, qualities, and models; military rifles; "à tige," and conical balls; cavalry holsters and pocket pistols.

142 Royal Cannon Foundry, Director Mr. C. Fréderics, Colonel of Artillery, *Liege.* (Agent in London, M. Cuylits, 55 Gracechurch Street.)

Cannon, Prussian model, rough, made of cast-iron; the same, Netherland model. Short Belgian model piece. Battery piece, rough cast iron. Light howitzer, Belgian model. Resting mortar, Belgian model; and two testing globes for the same. Bombs. Eccentric howitzer and round shot.

143 Ancion & Co., *Liege.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Double and single barrelled guns. Muskets, fowling-pieces, and guns for exportation. Portuguese and cavalry carbines. Duelling, cavalry and pocket pistols. Various plain gun-barrels.

144 Thonet, J., *Liege*—Manufacturer.

Gun ornamented with gilt silver.

Pair of Scotch inlaid pistols.

145 Lepage, —, *Liege.* (Agent, M. Cuylits, 55 Gracechurch Street.)

A collection of ornamental arms, consisting of double-barrelled guns. Rifles. Holster-pistols. Duelling-pistols. Pocket-pistols, &c.

146 Plomdeur, Nicolas, *Liege*—Manufacturer.

Gun, ebony stock. Pair of pistols, ebony stocks. Four English-fashioned guns. Gun, Lefaucheux system. Pair of "Scotch," ivory stocks. The same, double-barrelled. Miniature pistols, with case. Pair of locks. Six-barrelled pistol. Drawing-room pistol. Guard for a gun.

147 Malherbe, Louis, *Liege*—Manufacturer.

Double-barrelled fowling-pieces, percussion and flint systems. Various highly ornamented single-barrelled guns. Various single-barrelled guns and rifles. Pocket-pistols, single and double barrelled. Duelling and cavalry pistols.

148 Ledent, Mathieu, *Liege*—Manufacturer.

Patent locks for military and ornamental fire-arms.

149 Doutrewe, Francois-Joseph, *Liege*—Manufacturer.

Patent gun made after the needle system, loads at the breech.

150 Bernimolin, Nicolas, & Brother, *Liege*—Manufacturers.

Double-barrelled gun, loads at the breech. Five guns, damasked, English style. Pair of duelling-pistols, with ebony stocks. Two pair of Delvigne pistols.

151 Lardenois, Nicolas Charles, *Liege*—Manufacturer. (Agent, M. Cuylits, 55 Gracechurch Street.)

Rifle, with accessories, Swiss style. Double-barrelled gun highly chased. All the pieces of this gun, with the exception of the barrel and lock, were executed by Mr. Christian Lenders.

152 Tinlot, Jean-Michel, *Herstal, Liege*—Manufacturer.

Double-barrelled gun, with carved stock; style Louis XV.

153 Dehousse, Louis, *Liege*—Manufacturer.

Case containing a pair of duelling-pistols with carved ebony stocks, and accessories; likewise a pair of miniature pistols with ivory stocks. Double-barrelled gun with accessories, Turkish damasked barrel, English stock, mountings highly chased.

154 Falisse & Trapman, *Liege*—Manufacturers.

Gun and rifles, needle system. Series of nipples. Models for military arms and fowling pieces. Models for percussion caps for fowling pieces, &c. Models of gas-burners.

155 Tourey, Hyacinthe, *Liege*—Manufacturer.

Double-barrelled gun, work of art. Double-barrelled rifle, feather trigger, with accessories, very accurate. Double-barrelled gun (bright barrelled). A pair of chased pistols. Pair of duelling pistols.

156 Groetaers, Captain J. B., *Antwerp*—Inventor.

Patent instrument for measuring inaccessible distances; principally for the use of military and naval men.

157 Neyt, Adolphe, *Ghent*—Designer.

Drawings showing the plan of an artillery battery, for firing at once, either directly or obliquely, applicable to frigates and coast batteries.

158 Montigny & Fusnot, *Brussels.*

Three infantry guns, new system by the exhibitor.

159 Dufour, —, *Neufvilles, Hainault*—Inventor.

A patent plough.

160 Denis, Jean Baptiste, *St. Leger, Luxembourg*—Inventor.

Patent ploughs.

161 Le Docte, Henri, *Lenze, Hainault*—Inventor.

Patent branch hoe.

162 Verbist, Eugene, *Nivelles, Brabant*—Inventor.

Plough, called "tourne-oreille."

163 Claes, Paul, *Lembecq, Brabant*—Inventor.

Improved Scotch seed-bag. Articulated cast-iron roller.

164 Scheidweiler, Michel, *St.-Josse-ten-Noode, Brabant*—Inventor. (Agent, M. Cuylits, 55 Gracechurch Street.)

Mill for agricultural seeds on a moveable waggon.

165 Romedenne, Antoine, *Erpent, Namur*—Inventor.

Plough with double-head. Moveable harrow.

166 Duchene, Jean Joseph, *Asche-en-Rifail, Namur.*

Churns and buckets.

167 Train, Bernard, *Huy.*

Winnowing-machine for corn.

168 Van Maele, Edouard, *Thielt.*
Patent double plough for light soils. The same either for heavy or light soils.

169 Odeurs, Jean-Mathieu, *Marlinne, Limbourg.*
Single and double plough.

170 Berckmans, Jean Francois, *Blaesvelt, Antwerp.*
Improved Flemish plough.

171 D'Omalius-Thiery, G., & Sons, *Anthisne, Liege.*
Improved ploughs and hoe.

172 Valérius, Benoit, *Brussels.*
Theoretical and practical treatises on the manufacture of iron and cast-iron in Belgium.

173 Von Schendel, P., *Brussels.* (Agent in London, M. Cuylits, 55 Gracechurch Street).
Model of descriptive geometry for the demonstration of perspective.

174 Berden, F., & Co., *Brussels.*
Cabinet-pianoforte in rosewood.

175 Mahillon, Charles, *Brussels.*
Counterbass, violoncello, bugles, ophycleide, trombone, horn, trumpets, cornet-à-piston, clarionet mouth-piece.

176 Jastrzebski, Felix, *Brussels.*
Upright pianofortes; inlaid ebony; carved rosewood and maple wood.

177 Darche, Claude-François, *Brussels.*
Violins, after the models of Straduarius, Guarnerius, and Amati. Violoncello, on the model of Straduarius. The same, with six cords.

178 Demanet, C. A. J., *Ixelles, Brabant.*
Machine for transforming alternate movement into a continual circular movement.

179 Verhasselt-d'Outrelepont, F., *Brussels.*
Patent harmonium melodium for churches. The same for drawing-rooms. Patent double piano-harmonium, capable of being separated at pleasure.

180 Sternberg, Louis, *Brussels.*
Cabinet-pianoforte with triple string, in Amboyna wood. Another of the same.

181 Vogelsangy, François-Jacques, *Brussels.*
Patent grand-pianoforte in rosewood, patent upright-pianoforte in rosewood, with regulating movement.

182 Gérard, Antoine-Joseph, *Liege.*
Compass for dividing circles. Alarm-bells. Self-supplying pen. Model of an instrument for measuring distances. All these articles are patented.

183 De Hennault, J. B., *Fontaine-l'Evêque.*
Moveable telescope, with fixed level.

184 Latinie, Alexandre, *Soignies.*
Spectacle glasses from No. 6 to the highest number. Achromatic magnifying glasses. The same, common spectacles for short-sighted persons.

185 Lambert, G., *Mons.*
Model of patent mining-ladder. Patent compass, with fixed level for mining or field operations.

186 Aerts, F. G., *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Patent grand-pianoforte, with oblique strings, rosewood case.

187 Champagne, Donstiennes, *Hainault.*
Mechanical fore-arm.

188 Deffaux, Jean-Baptiste, *Brussels.*
Pianofortes in the style of Louis XV., and cabinet-pianofortes.

189 De Bast, Camille, *Ghent.*
Bleached and unbleached calicos.

190 Canfyn-Nimegeers, *Renaix.*
Cotton checks. Madras handkerchiefs.

191 De Behault-Ducarmois, *Termonde.*
Cotton bed-covers.

192 De Cuyper, Jean-François, *St. Nicolas.*
Common cotton checks. Double and triple warped cotton checks. Cotton check tickings. Doubled warped fancy cotton checks. Checks and stripes. Checks and stripes, double warped. Gala plaids, cotton warp. Plain and coloured gala plaids. Woollen shawls.

193 Janssens, De Decker, *St. Nicolas.* (Agent in London, M. Cuylits, 55 Gracechurch Street.)
Flannels and gala plaids.

194 Simonis, Iwan, *Verviers.*
Specimens of cloth and woollen stuffs.

195 Biolley, Francois, & Sons, *Verviers.*
Specimens of cloth and woollen stuffs.

196 Dubois, Gérard, & Co., *Verviers.*
Specimens of winter stuffs for trousers. Beaver and other cloths for paletots. Black kerseymeres for summer use. Mixture for winter. Specimens of fabrics for summer wear.

197 Sirtaine, Francois, *Verviers.*
Various pieces of cloth and kerseymeres.

198 Doret, Léonard, *Verviers.*
Specimens of different coloured woollen cloths.

199 Pirenne & Duesberg, *Verviers.*
Specimens of kerseymeres and beaver cloth, black, blue, green, brown, grey, and olive.

200 Piron-Thimister, *Francomont, Liege.*
Kerseymeres and zephyr cloth.

201 Olivier & Co., *Verviers.*
Silk and woollen livery cloth; double-warped, Asia blue, and Asia bronze.

202 Snoeck, C. J., *Herve, Liege.*
An assortment of zephyr cloth, fine cloth, and woollen kerseymeres of various colours, yellow, black, blue, bronze, scarlet, &c.

203 Deheselle, A. J., *Thimister, Liege.*
Pieces of flannel and dumet.

204 Xhoffray, Clement, & Co., *Dolhain-Limbourg, Liege.*
Worsted yarn for plaids, tweeds, fine flannel, tartan shawls, &c.

205 Vanderstraeten, A., & Co., *Liege.*
An assortment of woollen stuffs and kerseymeres.

206 D'Hont, Jean, *Roulers.* (Agent in London, M. Cuylits, 55 Gracechurch Street.)
Specimens of satin, chiné and embroidered.

207 Metdepenningen, Gustave, *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Silk for laces, for sewing, and for fringing.

208 Dobbelaere-Hulin, *Ghent.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of unbleached linen, spun and woven by hand; and of sail-cloth.

209 Ameye-Berte, R., *Ghent.*
An assortment of flax sail-cloths; flax linen for sheets; linen for bleaching and dyeing; specimens of fine linen; all woven by steam power.

210 Pyn & Van Pelt, *Tamise, East Flanders.*
Samples of hemp yarn.

211 Wilford, W., *Tamise, East Flanders.*
Samples of sail-cloths.

212 Cooreman, A. J., *Rebecq-Ragnon, Brabant.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Samples of linen thread for lace.

213 Vercruysse, Ferdinand, *Deerlyck, West Flanders.*
Raw, retted, and heckled flax, crop 1850. Thread and piece of linen, from the same flax. Rollers, with separated disks.

214 Verriest, P., *Courtrai.*
Specimens of coloured quilts.

215 Van Ackere, Jean-Constant, *Wevelghem, West Flanders.*
Extra-fine linen, warp of double-twisted thread, woof single, spun by hand. Unbleached linen, spun by hand. Handkerchiefs of mixed linen, power-loom. Unbleached cambric handkerchiefs. Lawn handkerchiefs. Flax in various states of preparation.

216 Berthelot & Bonte, *Courtrai.*
Specimens of flaxen thread, made by hand.

217 Du Jardin, Constant, *Courtrai.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of white and damasked napkins. Table-cloth, with portrait of the King of the Belgians.

218 De Brabandere, Pierre-Francois, *Courtrai.*
Bleached and unbleached power-loom linen. Bleached and unbleached mixed linen tick. Dyed linen handkerchiefs.

219 Van Oost, Pierre, *Hooglede, West Flanders.*
A piece of linen.

220 Thibau-Accou, *Iseghem, West Flanders.*
A piece of bleached linen, spun and woven by hand, having 7,000 threads in the warp.

221 Decock-Wattrelot & Baudouin, *Roulers.*
Strong bleached and unbleached linen, various sorts. Orleans, plain and figured. Alpacas, plain. Paramattas.

222 Parmentier, P., *Iseghem, West Flanders.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Pieces of fine unbleached linen of 6,000, 7,000, and 8,000 threads in the warp. White cambric handkerchiefs.

223 Demeulenaere, Eugéne, *Moorslede, West Flanders.*
Reeds of linen thread, spun by hand, various qualities.

224 Hartog Brothers, *Mechlin.*
Pieces of Russian linen.

225 Van Nuffel & Coveliers. *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Canvas for painting, oil-cloth, and wax-cloth.

226 La Commission Administrative de la Maison de Correction de St. Bernard, *Antwerp.*
Pieces of white Russian and cream-coloured linen. Striped and checked Gantes and Brabantes. Pieces of dowlas. Double Ravensduck. Sheetings. Striped and checked Listados. Duck and various other linens.

227 Marynen-Vues, J., *Turnhout.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Linen tick, prepared, and as it comes from the loom.

228 Haegens, Charles, *Zele, East Flanders.*
Samples of hempen sail-cloth, made by hand. The same, made of waste hemp.

229 Bongaerts, —, *Antwerp.*
Bags, without seams, made on the hand-loom. Game-bag.

230 Société Linière Gantoise, *Ghent.*
Specimens of tow and linen thread. Grey Lokesen twist. Yellow Courtrai twist.

231 Moerman-Vanlaere, *Ghent.*
An assortment of sail-cloths and linens. Bleached Everdocks. Coletas. Bleached Russias. Specimens both in flax and tow.

232 De Smedt-Breckpot, *Alost.*
An assortment of unbleached linens.

233 Dommer, T., *Alost.*
A variety of cambric handkerchiefs. Napkins. Table-cloths. Specimens of fine unbleached linen. Unbleached napkins, with crests. White and coloured blinds. Various coloured carpets.

234 Eliaert-Cools, *Alost.*
Thread for sewing and knitting.

235 Cumont-Declercq, *Alost.*
A collection of white and coloured sewing thread, of a very superior quality. The same, common quality.

236 Cornelis-Van Overloop, J., *Zele, East Flanders.*
Sail-cloths, of different qualities and sizes.

237 Goens, L. J., *Termonde.*
New flat hemp cables. Flat wire cables, preserved by a new method from oxidation.

238 Bosteels-Geerinck, J., *Zele, East Flanders.*
Various pieces of sail-cloth.

239 Deroubaix, Henri, *Courtrai.*
Samples of figured tick, all linen. Unbleached linen.

240 Lemaire, Descamps, & Plissart, *Tournai.*
Stuffs for trousers, in linen and cotton, mixed. The same, in cotton and wool, mixed.

241 Gilson & Bossut, *Tournai.*
Samples of cotton stuffs for trousers, plain, fancy, and dyed. Samples of cotton and linen, mixed, for trousers, plain and fancy. Samples of wool and cotton, for trousers and paletots, plain and fancy. Samples of plain linen fabrics.

242 Lienart-Chaffaux, Widow, *Tournai.*
Cotton and linen stuffs, for trousers. The same, linen and cotton. The same, wool and cotton. Wool and cotton mixtures for clothing.

243 Verhulst, De Rongé & Co., *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Various specimens of common cotton, chiné, and satined checks. Common, satined, and silk-satined jaconet. Superfine and silk satined cravats.

244 Catteaux Brothers, *Brussels.*

Fabrics for trousers, in cotton, linen, wool and cotton mixture, linen and cotton, cotton warp, and linen woof.

245 Catteaux-Gauquié, *Courtrai.*

A large assortment of stuffs for trousers, including fine and mixed cotton cloths, kerseymeres, figured mixtures, prunellas, evergreens, ribbed, plain, and figured stockinettes, &c. Also linens and cambrics, siamese and swanskins, handkerchiefs, &c.

246—250 Petit-Noel, —, Lerouge, —, Demyttenaere, M., Dujardin, L., and Terrein & Co., *Mouscron, West Flanders.*

Stuffs for trousers, in cotton, wool and cotton, and linen and cotton.

251 Schelstraete, Louis, *Courtrai.*

Cotton stuffs, and cotton and linen fabrics, for trousers.

252 Vandenherghe, Jean, *Courtrai.*

Cotton, wool and cotton, and cotton and linen fabrics, for trousers.

253 Houdin & Lambert, *Brussels.*

Varnished calf-leather for boots and shoes.

254 Taillet, Vincent, *Brussels.*

Specimens of boot legs and boot fronts. Polished calf-skins. Grey calf-skins. Calf-skin, prepared for polishing. Calf-skins, for spinning factories. Neat's leather, prepared for varnishing. Varnished calf-leather, for carriages.

255 Van Molle, Egide, *Assche, Brabant.*

A plough-horse collar.

256 Ladoubée-Le Jeune, Ch., *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of harness, saddles, bridles, martingales, &c. Samples of curried leather.

257 Hanssens-Hap, *Vilvorde, Brabant.*

Specimens of stuffs for furniture. Furnishings for chairs, sofas, &c. Improved horse-hair damasked furniture stuffs, both sides alike. Horse-hair stuffs for caps. Horse-hair stuffs, damasked, satined, &c., for furniture. Damasked linen, napkins, and table-cloths. Specimen of very superior napkins, with crests. Various qualities of table linen. Desert napkins, with fringes. Unbleached breakfast table-cloths. Samples of bristles, prepared and bleached for painting brushes.

258 Weber, Georges, *Brussels.*

Assortment of purses and cigar-cases.

259 Weinknecht, *Brussels.*

Fur drawing-room carpets. Fur cloaks. Ornamented foot-stools.

260 Fasbender, Herman-Joseph, *Brussels.*

Patent varnished cow-skin. Black skin for harness and bridles. Yellow skin for bridles.

261 Lombaer, *Jette-St-Pierre, Brabant.*

Varnished calf-skins for boots and shoes. Various coloured skins.

262 Bauchau-De Baré, Ambroise, *Namur.*

Tanned skins for soles and pump leathers. Assortment of skins of various qualities.

263 Cabu-Février, François, *Namur.*

Collection of shoemakers' materials, consisting of boots of various descriptions, buskins, shoes of improved make, and articles of the same kind for ladies.

264 Troostenberghe, Désiré, *Bruges.*

A pair of shoes, without seams.

265 Somzé-Mahy, Henri, *Liege.*

Brushes, for personal and domestic use. Brushes, made of various materials, for the use of the stables, &c. Samples of bristles, horse-hair, and other articles, used in the manufacture of brushes.

266 Bouvy, Alexandre, *Liege.*

Grey and polished calf-skins.

267 Masson, Charles, *Huy.*

Leather used by shoemakers and coal-miners.

268 Somzé, junior, *Liege.*

Brushes for cleaning cannon. Patent broom, for cleaning windows.

269 Vanstraelen, Joseph, *Hasselt.*

Gentlemen's and ladies' saddles. Complete set of tilbury harness.

270 Kistemaeckers, H., *Antwerp.*

Various kinds of horse-hair, for sieves. Dyed horse-hair.

271 Van Alteynnes-Schockeel, *Louis, Ypres.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Ox-hides, for soles. Rosettes, for harness and shoemakers. Calf-skins. Bark.

272 Dusauchoit, Edouard, *Ghent.*

Dyed and prepared cat-skins, to imitate sable. An assortment of dyed cat and rabbit skins. Gloves made of rabbit skin, raw and prepared. Drawing of a machine for preparing leather.

273 Hesnault & Brother, *Ghent.*

Dyed and tanned rabbit and goat skins. Dyed and prepared dogskins.

274 Vandenbos-Poelman, *Gustave, Ghent.*

Pair of varnished calf-leather top-boots. Pair of shooting-boots made of Russian leather. Waterproof boots for fishing and snipe shooting. Shooting-shoes and gaiters. Varnished calf-leather half-boots.

275 Casterman & Sons, *Tournai.*

A collection of printed books.

276 Hayez, Marcel, *Brussels.*

Books, including Annuaire de l'Observatoire; Mémoires de l'Académie; Bulletin de l'Académie; Traité des Fonctions Elliptiques, Théorie des Probabilités; Dictionnaire Universel des Poids et Mesures; Annales de l'Observatoire; Bulletin de Statistique, Nouveaux Mémoires de l'Académie; Chronique Belges inédites, &c.

277 Briard, Jean-Henri, *Ixelles, Brabant.*

Specimens of Bibles and New Testament. Bible printed on Chinese paper.

278 Parent, F., *Brussels.*

Bivort's Album de Pomologie, containing written and illustrated descriptions of the most remarkable and valuable fruits.

279 Lesigne, Théodore, *Brussels.*

Books: Statistique générale de la Population de la Belgique; and Statistique agricole de la Belgique.

280 Zegelaer, Elie, *Brussels.*
Various-coloured sealing-wax.

281 Tardif, Eugène, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Letter envelopes.

282 Wesmael-Legros, Adolphe, *Namur.*
Roman missals and breviary, printed in black and red.

283 Henry, Prosper, *Dinant.*
Printing pasteboards. Specimens of card paper.

284 Godin, J. L., & Sons, *Huy.* (Agent, M. Cuylits, 55 Gracechurch Street.)
A collection of papers.

285 Hanicq, Pierre-Joseph, *Mechlin.*
Books of the Roman Liturgy, printed in red and black.

286 Glénisson & Van Genechten, *Turnhout.*
Marbled, plain, coloured and fancy papers. Prints. Playing-cards.

287 Idiers, A. J., *Brussels.*
Turkey red yarn, and plain calicoes, in Turkey red, and fast colours.

288 Dietens, Jean-Baptiste, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Printed shawls. Scotch cachemeres.

289 Verhulst & Co., *Brussels.*
Specimens of printed calicoes.

290 Verreyt, Jacques, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Plain and printed corahs. Handkerchiefs of rich patterns. Corded "pongée" handkerchiefs. A silk-satin dress.

291 Servais, Jean Baptiste, *Louvain.*
Blue cotton and linen fabrics, shaded in the dye.

292 Thibau-Sette, Pierre, *Iseghem, West Flanders.*
Power-loom coloured cloths, for the making of blouses, ladies' robes, and paletots, of very fine texture.

293 Deweweirne, Joseph-Josse, *Ghent.*
Specimens of printed calicoes. Skins dyed and printed.

294 Voortman, Abraham, *Ghent.*
Pieces of printed calico, for shawls, handkerchiefs, and furniture.

295 Servaes, M. F. *Alost.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Printed cotton stuffs, for neck and pocket handkerchiefs, and other purposes.

296 Verduré-Berge, Charles Martin, *Tournai.*
Velvet imitation carpets of mixed fabrics, representing the arms of the ancient provinces of the Netherlands and various allegorical designs.

297 Manufacture Royale de Tapis de Tournai. Directors, Overman and Delevigne, *Tournai.* (Agent, M. B. A. Grantoff, 4 Lime Street, City.)
Specimens of carpets: washable and imitation Smyrna carpets; Wilton carpets, &c.

298 Polak, Mlle. Floré, *Brussels.*
Designs for lace.

299 Vanhaelen, Widow, *Brussels.*
Imitation Brussels lace; a scarf; a short veil; a mantilla shawl; collars; flounces, 9 yards, and 4 yards and a half in length, respectively; a bertha; a pair of sleeves; a parasol; pieces of lace; a mantilla; head-dresses.

Scarfs, pelerine, and handkerchief, application of Brussels lace.

300 Lemaieur-Detige & Co., *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
An assortment of laces, trimmings, fringes, &c., for furniture.

301 Roy, C. François, *Brussels.*
Specimens of point lace, needle-worked.

302 Melotte, Eugene, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
A flag, presented by His Majesty the King of the Belgians to the Royal Choral Society of Mehul, Brussels. Embroidered by the exhibitor.

303 Van Halle, Joseph, *Brussels.*
Church ornaments, ornamented with gold, and set with precious pearls. Albs in Brussels lace.

304 Atelier de Notre Dame, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Brussels lace, guipure and point work.

305 Delehaye, —, *Brussels.*
Specimens of real net lace:—A scarf of worked point lace. A flounce of the same. A small veil and a bertha, in cushion work. A band in point (needle) work.

Specimens of tulle:—A flounce, bertha and collar, in point (needle) work. A handkerchief and bertha in cushion work.

306 Jorez, Louis, jun., *Brussels.*
A large oil-cloth carpet. Oil-cloths for passages, and for carriages. Common oil-cloths. Soft oil-stuffs. Table-cloths, printed and gilt. Taffetas, gum, glazed, and black. Waterproof cloths, highly-finished cloaks of the same; hunting overalls. Cow-skins, tanned and dressed for hoods. Enamelled calf-skins; the same for boots and shoes, and for saddlery. Cow-skins for graining and varnishing. Black enamelled sheep-skins, and of various assorted colours. Glazed papers for ornamental purposes.

307 Stocquart Brothers, *Grammont.*
Articles of black silk lace produced by machinery and by hand. A square shawl. Two half shawls of point lace. Lace scarfs. Ornamented mantilla, veils, and bertha. Parasols plain, mounted, &c. Lace head-dresses and lappets. Edging for lace trimmings.

Articles in blond white silk, produced by machinery and by hand:—A half shawl of point lace. Parasols, veils, head-dresses, berthas, of various descriptions.

A bonnet foundation, representing the capture of the city of Grammont in the third century.

Articles in white thread lace, produced by machinery and by hand:—A small veil; a bertha; head-dresses; and lappets.

308 Naeltjens, Guillaume, *Brussels.*
Brussels lace and guipure; exhibiting the application of point lace and guipure work.

309 Reallier, Emma, *Brussels.*
A lace pocket-handkerchief, in point needlework, wholly of linen.

310 Heusschen-Van-Eeckhoudt & Co., *Brussels.*
Lace articles in point needle work, point-de-venise, and hand net-work.

311 Robyt, Louis, *Brussels.*
Lace in Brussels application and guipure.

312 Vanderhaegen, Van Overloop, *St. Gilles, Brabant.* (Agent, M. Charlwood, 38 Coleman Street, City.)

Brussels lace.

313 Vanderkelen-Bresson, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Application lace, point Mechlin, guipure, and Brussels black lace.

314 Duhayon Brunfaut & Co., *Brussels and Ypres.*

Specimens of Valenciennes lace, and of Brussels lace.

315 Vandersmissen, Prosper, sen., *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of real and imitation Brussels lace.

316 Defrenne, Sophie, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Brussels lace in needle and curtain work.

317 Du Jardin-Lammens, *Brussels.*

Cushion in tapestry, raised work, ornamented with pearls on a silk ground. Cushion in raised work, on silk ground. Another in zephyr wool, worked in roses and leaves. Greek caps, embroidered in gold and silk; with stars and arabesques, in a rose pattern, and of a superfine material. Lamp-rugs, knitted in wool and chenille, and in roses and wreaths. A pair of slippers worked in mosaic-gold embroidery; another embroidered in gold, silk, and wool, sprig pattern. A pair of braces worked in crochet, with silk and wool; and another in needle-work, with silk and gold threads. A picture embroidered in chenille, silk and gold. Purses worked in crochet, fine gold and silk. A pair of fire-screens worked in crochet, in silk and gold.

318 Washer, F., sen., *Brussels.*

Specimens of tulle, Brussels net, made from British lace, twist, Nos. 36, 400, 450, 500, and 550.

319 Belloni-Ance, L., *Brussels.*

Lace trimming. Scotch dress shaded olive. Black lace dress. Scotch buttons, &c., of various kinds, colours, and patterns. Cordings, Brandeburg Spanish point. Black silk knots. White buttons. American dress. Buttons of various kinds, in wool and silk. Tassels. Knotted cords. Marie-Louise dress trimmings in gold and silver, &c.

Two gold vases.

Various ornaments. Fine silver fancy lace. A flower-basket of knitted wool, &c.

320 Violard, Georges, *Brussels.*

Model of a new arrangement of designs for the manufacture of lace.

321 Everaert Sisters, *Brussels.*

A square shawl of black lace. Trimmings of a dress, two flounces. A veil. Ladies paletot and specimens of net, and of point lace.

322 Etablissement de St. Joseph, *Verviers.*

Specimens of Flanders guipure, and other sleeves of the same.

323 Desmedt, Widow, *Sweveghem, West Flanders.*

Specimens of cambric handkerchiefs. Muslin bands, collars, and sleeves.

324 Beck & Son, *Courtrai.*

Specimen of Valenciennes lace. A piece of hand-spun bleached linen cloth.

325 Deblauwe-Peel, Jean, *Courtrai.*

Specimens of Valenciennes lace.

326 Beernaerth & Decuypere, *Courtrai.*

Specimens of Valenciennes lace, made at Courtrai.

327 Van Straelen, Madame, *Bruges.*

Specimens of Valenciennes lace, and lace collars.

328 Bousson, De Vlieghere, *Bruges.*

Flounces for ladies' dresses in Flanders guipure lace.

329 Dartevelle & Mounoury, *Brussels.* (Agent M. Cuylits, 55 Gracechurch Street.)

An assortment of embroidered tulles.

330 Tollenaers, Therese, *Bruges.*

Specimens of lace.

331 Paternostre, *Louvain.*

Specimens of pictures, &c., of scriptural subjects executed in the Gothic style.

332 Noel, —, *Louvain.*

Specimens of military accoutrements in wool, consisting of epaulettes, counter-paulettes, &c. Specimens of superior accoutrements of the same kind, subaltern officers and musicians.

Specimens of similar accoutrements for city police, and for artillery, infantry, and cavalry officers.

Specimens of laces of various descriptions: gold, worsted and gold, in thread, worsted and cotton, worsted. Silver aiguillettes. Coaster-epaulettes, embroidered, &c.

333 Van Kiel, Sisters, *Mechlin.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of Malines or Mechlin lace.

334 Berenharts, Alexandre, *Antwerp.*

A flounce, ten yards in length, embroidered on fine net, in imitation of real lace-work. A scarf, bertha, head dress, and sleeves, of the same fabric. A pocket handkerchief of real cambric, with embroidered edge of fine net, also in imitation of lace.

335 Paquet, Marie, *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of imitation lace.

336 Will, Meyer, & Co., *Antwerp.*

A tulle dress, with flounces, embroidered in crochet by hand.

337 Hammelrath, Pierre Henri, *Ypres.*

Specimens of Valenciennes lace, made at Ypres.

338 Soenen, Florimond, *Ypres.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of Valenciennes lace, made at Ypres.

339 Van Loo, E. J. & F., *Ghent.* (Agent, M. Cuylits, 55 Gracechurch Street.)

A shawl of black silk Brussels lace, *appliquée.*

340 Plettinck, Mabilde, *Ghent.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of flounces in Brussels lace, *appliquée.*

341 Haeck, Isabelle Therese, *Destelberghe-lez-Ghent.*

Lace veil, Brussels *appliquée*, on a ground of real net.

342 Fretigny, Louis, *Wetteren.*

Table-cloths of mixed fabric, worsted and cotton; also Milanese table-cloths, in colours; others of worsted and cotton, on a black ground, and of pure wool.

Oriental tapestry, *portières.* Woollen rugs, in seven colours. Cambric muslins, brocaded, pinked, and embroidered. Point lace, white damasks, bath cloths, napkins, &c.

343 VAN NIEUWENBORG BROTHERS, *Lokeren.*
Grey felt hats; shorn-nap hats; silk hats, with canvas and felt bodies; hats for the military, clergy, &c.

344 ANCHIAUX, JOS., *Lokeren.*
Felt hats for the military, for the clergy, and for the upper classes; shorn-nap hats of various qualities.

345 VAN BENEDEN-BRUERS, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of corsets, without seam.

346 VAN BENEDEN, Widow, *Brussels.*
Specimens of corsets, without seam; of cotton fabric, which can be laced quickly. Corset made of a satined mixture, &c.

347 JACQUOT, FRANÇOIS *Brussels.*
Specimens of military felt and beaver hats. Flemish felt. Silk hats, of superfine and common quality. Grey felts for settlers. Hat models and blocks.

348 HEGLE, CHARLES, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
An assortment of kid gloves.

349 BERGER, Madame, *Brussels.*
Specimens of corsets.

350 DEKETELAERE, —, *Bruges.*
A complete collection of sabots (wooden shoes).

351 LIÉVAIN, LOUIS, *Mechlin.*
An assortment of felt and silk hats.

352 MONNOYER, PIERRE JOSEPH, *Namur.*
Table knives, mounted in silver, and dessert knives.

353 DRION, EMILE, *Gosselies, Hainault.*
Samples of iron nails, forged by hand.

354 LEFEBVRE, VICTOR, & Co., *Chercq-lez-Tournai, Hainault.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Nail-pins; the same, for shoes. Pegs and sparables of iron; the same, for glaziers. Rivets.

355 VANDERCAMER, JACQUES AUGUSTE, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Vases of hammered zinc, with ornaments, cast and chased.

356 PUISSANT, F., *Court-St.-Etienne, Brabant.*
An iron apparatus, adapted for the use of dealers in bullion.

357 GOB, JACQUES, *Brussels.*
A strong box of iron, with double doors; the outer one, being let down, forming a writing-desk.

358 SIERON, LOUIS, *Brussels.*
Specimens of nails.

359 MATHYS, JEAN, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
A strong box, of new construction, in the form of a buffett. Double-cased iron escrutoire. An open stove, of polished steel, with gilt ornaments, in the style of Louis XV. A drawing-room stove, mounted in polished steel, with gilt ornaments and consoles. A furnace on a new principle, with double oven.

360 DUBOIS & Co., ACH, *Molenbeek, St. Jean-lez-Brussels.*
A mantelpiece. Group for a time-piece. Paper-presses. Candlesticks. A cigar-holder, and wax-tapers; inkstand; chandelier; candelabra; seal, ewer, and spittoon; all made of coppered zinc.

361 DE BAVAY, PAUL, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Samples of nails, called *pointes de Paris*, manufactured from iron, zinc, brass, and copper.

362 MARCHAL, DÉSIRÉ, *Ixelles-lez-Brussels.*
Specimens of laminated iron sleepers, with cast-iron chair.

363 DE LATOUR, ALBERT, *Schaerbeek-lez-Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Busts, executed in cast-iron, of the King and the Queen of the Belgians. Model of the letter-boxes adopted by the Belgian Government.

364 DE LA ROCHE, FRANCOIS-THÉODORE, *Brussels.*
Patent fireproof strong box. Chimney-piece, with gilt ornaments of novel design. The same of polished steel, with ornaments in cast-iron. A stove, with fire-grate, which can be kept open or closed, at pleasure. A moveable hearth-chimney, of metal, in imitation of steel.

365 DE ROSÉE, ALPHONSE, Baron, *Moulins, Namur.*
Specimens of brass kettles, pans, "neptunes," and oval-shaped saucepans.

366 MONCHEUR, F. & A., *Ardennes, Namur.*
Ingots of cast-iron, for the manufacture of gun-barrels. Hammered bar-iron, for the same purpose.

367 SEVERIN, E., *Rochefort, Namur.*
Specimens of nails of various sizes. Nails for plank-floorings; for slates, ceilings, pumps, or boilers; nails for lathes and for saddlery. A variety of shoe-nails; heel and sole tips; double-pointed nails; nails for farriery purposes; roughened frost nails; iron hooks; hasps for window-curtains and other purposes.

368 AMAND, JOSEPH, *Ermeton-sur-Biert, Namur.*
Specimens of wrought and cast iron. Bars for gun-barrels, small arms, edged tools, scythes, tires of wheels, spades, &c.; for steam-boilers, boiler nails, ornamental mountings of fire-arms, and for general hardware purposes.
Specimens of cast-iron, of first and second quality, for articles requiring ductility and great resisting power.
Specimens of refined cast-iron.

369 BENOIT, FABER, *Marche-les-Dames, Namur.*
Specimens of ores of hydrated iron; of grey cast-iron, hard iron, cold-hammered iron, white iron, and soft iron.
Specimens of iron, for converting into steel; bars for gun-barrels and iron hooping; cast-iron pots of various sorts, with covers; boilers, with lids; kettles, saucepans, stew-pans, &c.

370 DE CHIMAY, PRINCE, *Chimay, Hainault.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Bars of wrought iron, refined by charcoal, and especially used in the manufacture of arms.

371 REMACLE, J., & PÉRARD, jun., *Liege.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of sheet-iron of various descriptions.

372 ORBAN, J. M. & SON, *Liege.*
Specimens of sheet-iron; tires for wheels; bar-iron; laminated iron; galvanized iron for springs, &c.

373 THONNART, LAMBERT, *Herstal.*
Steel bits for carriage and saddle-horses. Polished Wellington steel-bits, with smooth, straight, and curved mouth-pieces. Dutch bits, polished steel mouth-pieces, and a variety of other kinds.

374 **Société de St. Léonard**, *Liege*. (Director, M. Regnier Poncelet.)

Specimens of ingots and bars of steel; iron plates; hand-saws, plates, files and scythes of steel.

375 **Pérée, Jean François**, *Liege*.

A copper tap-cock, with curved extremity. Improved tap-cock, straight, with secret spring. Three crucifixes, in copper.

376 **Delloye-Matthieu, Charles**, *Huy*.

Specimens of sheet iron and sheet steel.

377 **Chaudoir, Charles & Hyacinthe**, *Liege*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of brass tubings, without solder.

378 **Macquinay Brothers & Nephews**, *Liege*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Samples of iron nails, made by hand.

379 **Giltay, Jean-Jacques**, *Liege*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Spurs, stirrup-irons, and other riding appurtenances, in great variety.

380 **Fauconier, Delire**, Widow, *Châtelet*. (Agent, Mr. Laroche, 2 Old Trinity House, Water Lane.)

Various sorts of nails, wrought by hand.

381 **Limelette, Frédéric**, *Gosselies*.

Samples of wrought-iron nails.

382 **Levy-Prins & Prins, J. B.**, *Brussels*.

Collection of brooches, set in pearls, precious stones, &c. Bracelets, set in emeralds, pearls, and other valuable stones. Chatelaines. Brilliant, sapphire, and emerald pins. Seal-shaped diamond. Model of a bench, with tools for cutting and polishing diamonds. Exhibited for workmanship and cheapness.

383 **Julin, N.**, *Liege*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Specimens of cameos.

384 **Falloise, Joseph**, *Liege*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Chased and inlaid articles in bronze, steel, copper, and silver-gilt.

385 **Michiels, Joseph**, *Antwerp*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Statue of H.R.H. the Princess Charlotte of Belgium, in plaster, coated by the electrotype process.

386 **Brodier, Chistiaens**, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)

An assortment of cut crystal.

387 **Capellemans, J. B.**, *Brussels*.

A large collection of crystal and glass. Samples of hog's bristles for brushes.

388 **Zoude, Louis, & Co.**, *Namur*.

Specimens of crystal, consisting of vases, drinking-cups, fruit dishes, tumblers, wine-glasses, &c. Glasses and tumblers of half crystal. Glasses and goblets, with various designs of eminent personages. A great variety of household and ornamental vessels, in glass.

389 **Jonet, D. Couillet**, *Hainault*. (Agent, M. Laroche, 2 Old Trinity House, Water Lane.)

Imitation of ancient stained window-glass. Modern stained window-glass. Unpolished window-glass. Silvered and unsilvered glass. Plain and coloured window-glass. Glass tiles, &c.

390 **Bennert & Bivort**, *Jumet, Hainault*.

Specimens of window-glass.

391 **Dierckx, François**, *Antwerp*.

Fine specimen of cut-glass dinner-service.

392 **Frison, Jules, & Co.**, *Dampremy, Hainault*.

Window-glass, double and common thickness, and thin, called Bohemian glass. Unpolished window-glass. Fluted glass. Glass tiles.

393 **Cappellemans, sen., & Daboust**, *Brussels*.

Busts of the King and Queen of Belgium, Queen Victoria, and Prince Albert, in biscuit-porcelain, of life size, after Geefs. Various articles in biscuit-porcelain. Porcelain dinner and dessert service. Coffee service. Vases, baskets, &c.

394 **Temsonnet, G., & Dartet**, *Namèche and Samson, Namur*.

Fire-clay for manufactures in glass, pottery, dyeing, glazing, &c.

395 **Pastor, Bertrand, & Co.**, *Ardennes*.

Gas-retort for high furnaces. Fire-bricks for lining the inside of high furnaces. Specimens of fire-clay of Ardennes. Fire-bricks. Different sized tubes for drains.

396 **La Commission Administrative de l'Exploitation communale**, *Marchin, Liege*.

Rough specimen of pudding-stone. High-furnace crucibles, made of the Marchin stone.

397 **Coste, Frederic**, *Tilleru, Liege*.

Collection of crucibles, of which the base is graphite (plumbago). Another collection, of which the base is fire-proof clay.

398 **Smal-Werpin, Alexis**, *Huy*.

Specimens of fire-bricks, small size.

399 **Boucher, Théophile**, *Bandour, Hainault*.

Fire-clay gas retort. Specimens of fire-clay for lining furnaces, gas-ovens, &c. Sagger for baking porcelain by a new patent process.

400 **De Fuisseaux, Nicolas**, *Baudour, Hainault*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Various articles in porcelain: baskets, punchbowls, vases, dishes, plates, compotiers, &c.

401 **Devis, E.**, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Panels and paper-hangings.

402 **Demanet, Charles**, *Saint-Josse-ten-Noode, Brabant*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Inlaid rosewood table and sideboard.

403 **Lefebvre, Alexis**, *Molenbeek-St.-Jean, Brabant*.

Paper-hangings and panels.

404 **Couvert & Lucas**, *Brussels*.

Specimens of mosaic floors. Mosaic table, with fluted columns and inlaid pedestal.

405 **Picard-Masy, Edmond**, *Brussels*.

Specimens of paper-hangings, glazed, velveted, gilt, &c.

406 **De Keyn Brothers**, *St.-Josse-ten-Noode, Brabant*.

Mosaic flooring in wood, stained in a variety of colours.

407 **Dussaert, Joseph**, *Brussels*. (Agent, M. Cuylits, 55 Gracechurch Street.)

Vessel made in carton-pierre, plated. Frame of the same, gilt. Gilt pedestals, for candelabra.

408 Giron, Elisa, *Brussels.*
Imitations of China lacquer. A screen, with gilt ornaments on both sides. Tables, of fancy designs. Chairs, with velvet trimmings.

409 Menge, Antoine-George, *Brussels.*
Carved oak model of a fountain. Gothic carved oak frames. Gothic carved oak chapel. Small oak bell, lime-tree ornaments. Two candelabra stands. Oak tablets, gilt on both sides.

410 Jehin, Henri-Joseph, *Spa.*
Table, in plane-tree, painted with flowers, and veneered with maple-tree. Tea-chests, ornamented with flowers. Envelope-cases and handkerchief-boxes, with fancy designs. Ornamented desk, counter-box, and portfolios.

411 Bruno, Henri, *Spa.*
Table. Work-boxes. Portfolio. Tea-chest.

412 Misson, Emile & Louis, *Spa.*
Table, work-boxes, writing-cases, cigar and needle-cases, knitting and glove-boxes, and various other articles, all beautifully painted with flowers and designs.

413 Misson, Aristide, *Spa.*
Work-boxes, cigar-cases, tea-chests, jewel-casket, envelope-cases, baskets, music-desk, &c. All are painted with curious designs.

414 Marin, Jonas-Etienne, *Spa.*
Round tables, with views of Spa and its environs. Ladies' work-boxes, with flowers and landscapes. Album, with a Chinese subject, in imitation of Chinese lacquer. Fire-screen, white ground, representing Chinese subjects. Large-sized work-boxes, with flowers and figures. Tea-chest and jewel-casket, similarly ornamented; and an album.

415 Massardo, Jeanne (Widow), *Spa.*
Large work-boxes, painted by Crehay; subjects: The Indecision, and the Reconciliation. Smaller ones, by Henrard and Rainkin. Jewel-caskets, by the same. Ornamented albums. Tables, fire-screens, and baskets, ornamented with flowers and landscapes.

416 De Jonghe, Ambroise, *Bruges.*
Specimens of ornamental inlaying, designed and executed by the exhibitor.

417 Colfs, Jean-François, *Antwerp.*
Drawing-room chair, arm-chair, and tête-à-tête.

418 De Raedt, Jean-Gommaire, *Antwerp.*
Sideboard, ornamented with mirrors, and made of rose and satin-wood.

419 Roulé, A. F., *Antwerp.*
Articles of furniture in ebony, tortoiseshell, rosewood, and oak.

420 Judo, Jean-Baptiste, *Berchem, Antwerp.*
Oak carved wardrobe, with four drawers, mouldings, and ornaments. Carved mahogany chair, with the back carved and ornamented. Carved walnut-tree chair. Light mahogany chair, with mouldings. All in the style of Louis XV. Common walnut-tree chair.

421 Deruelle-Delevoye, François, *Ghent.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Cylindric book-stand and writing-desk.

422 Hooghstoel, Louis-François, *Ghent.*
Antique wardrobe, in the Byzantine style.

423 Guislain, Charles, *Hastière-la-Vaux, Namur.*
Marble slabs, for round tables, of various descriptions. Candelabras, in black marble.

424 Soetens, Cornélis, *St.-Gilles-lez-Brussels, Brabant.*
Artificial stone pillar and flags, for pavement. Artificial stone medallion. These specimens are made of fusible lava, by a new process.

425 Leclercq, Augustin, *Brussels.*
White and black Belgian marble chimney-pieces. Washing-stand, of foreign marble. Marble dressing-table. Mosaic square, composed of specimens of Belgian marble.

426 Follet, Narcisse, *Verviers.*
Stucco columns.

427 Vanderoost, Michel, *Brussels.*
Specimens of patent leather boots. Goat-skin boots. Boot-trees. Patent and common lasts.

428 Stainier, Stanislas, *Brussels.*
Boot-trees, for the improvement of all descriptions of boots. Lasts of a new construction, and shoes made upon the same.

429 Dosin, J. B., *Hermalle-sous-Argenteau, Liege.*
Tables and chairs, in platted willow.

430 Loncke-Haeze, Ch. L., *Roulers.*
Brushes, for polishing, for clothes, for hair, dusting, hats, sweeping, scrubbing, waxing, &c.

431 Quanonne, C. & J., *Cureghem, Brabant.*
Specimens of stearic candles. Block of stearine.

432 Robert, P. J., jun., *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Specimens of parasols and marquees.

433 Delstanche & Leroy, *Molenbeek-St.-Jean, Brabant.*
Specimens of wax candles.

434 Touche-Gillès, E., *St. Laurent, Antwerp.*
Specimens of soap, made of olive oil, tallow, hog's lard, and cocoa oil.

435 Brenta, D., *Antwerp.*
Group of foreign and Belgian stuffed birds.

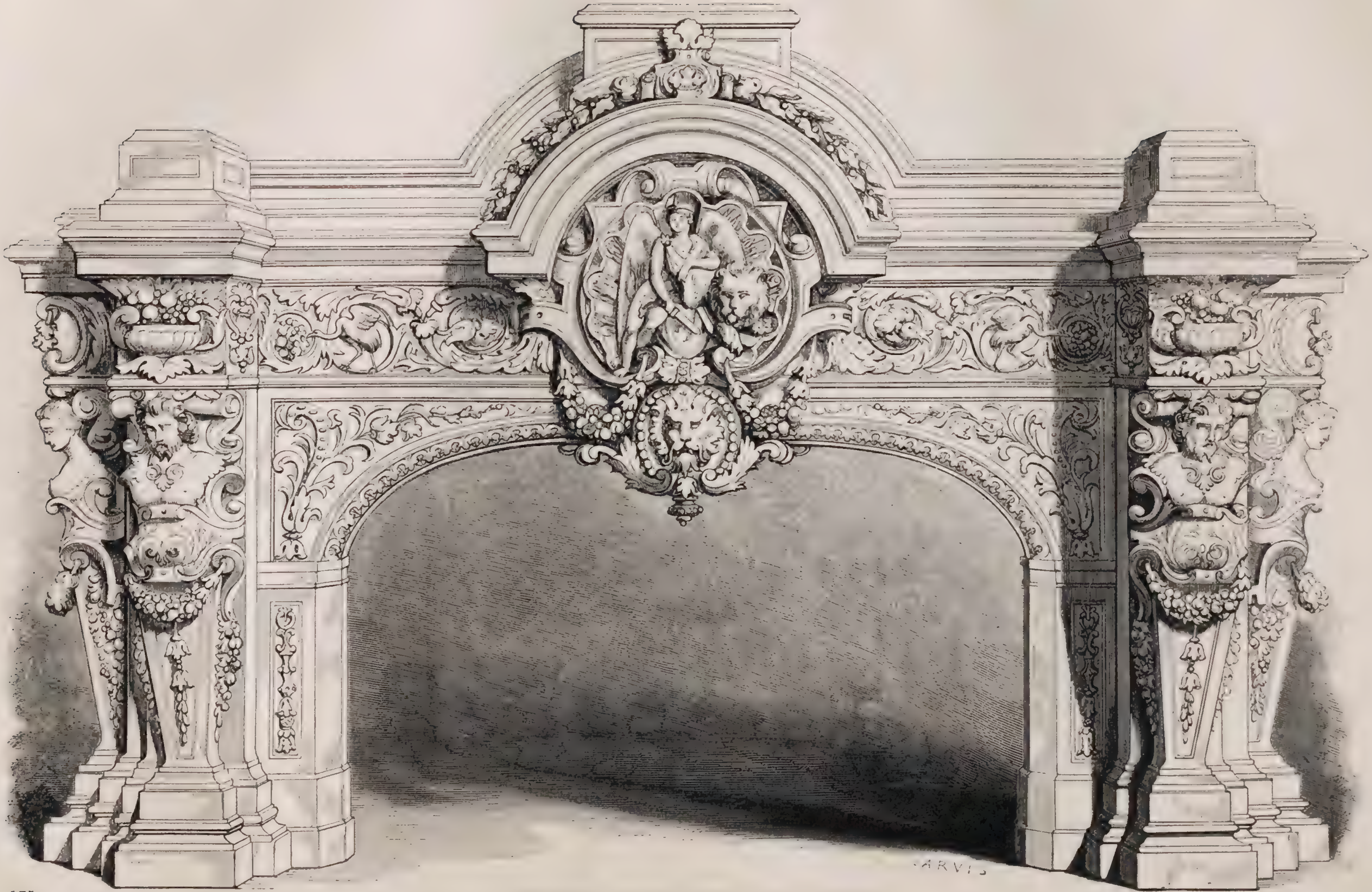
436 Van Campenhoudt, Ch., & Co., *Heusden-lez-Gand, East Flanders.*
Specimens of stearine candles and oleic acid.

437 Vander Maelen, Ph., *Molenbeek-St.-Jean, Brabant.*
An atlas, containing eight lithographs of the new topographical map of Belgium, prepared under the direction of Messrs. Gérard and Vander Maelen; scale 1 in 80,000.

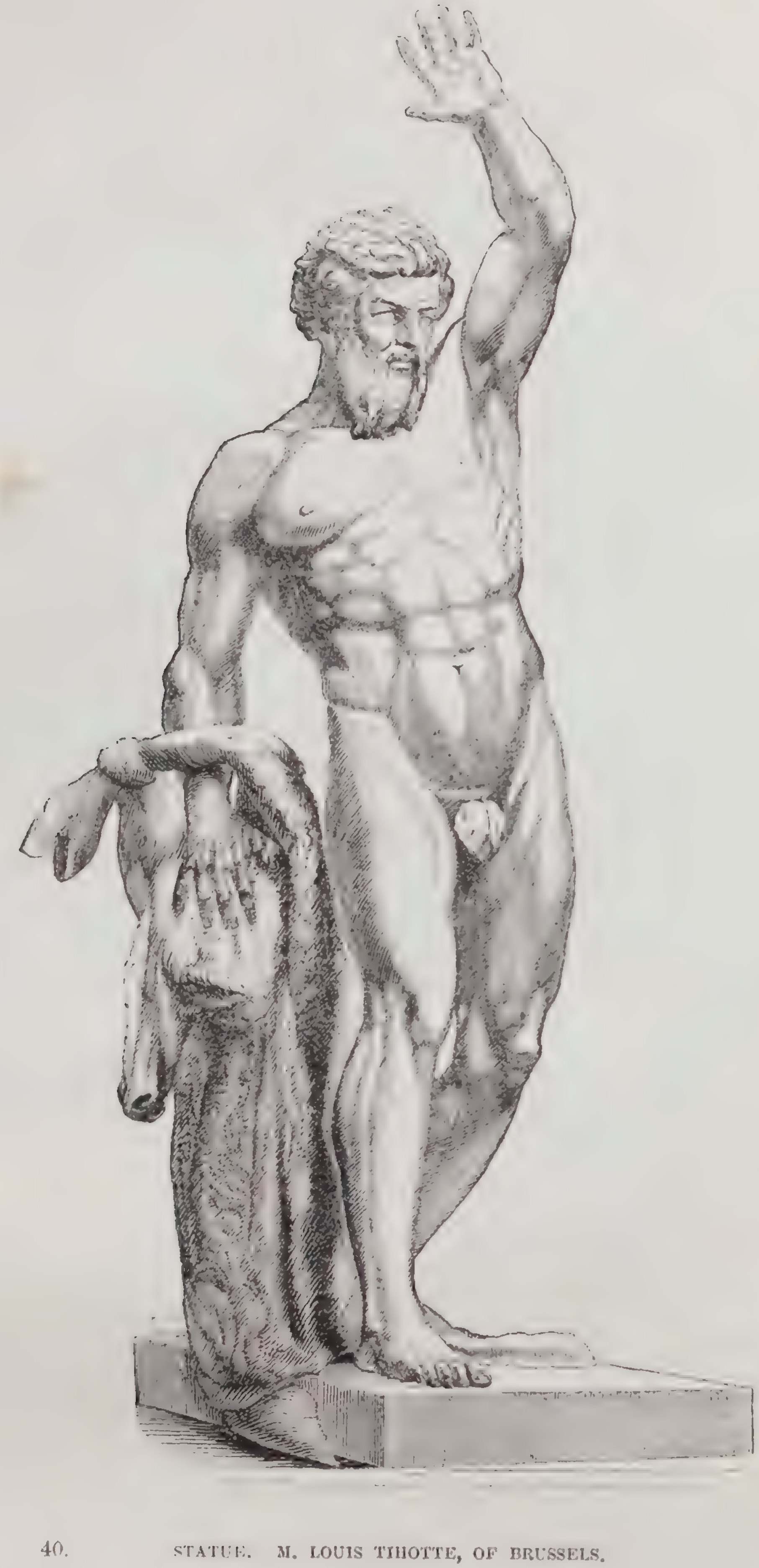
438 Capronnier, Jean-Baptiste, *Brussels.*
Stained glass, with pictures in the antique style.

439 Beernaert, Antoine, *Brussels.*
Specimen of white stone, being part of that employed in building St. George's Church, Antwerp. Carved oak cabinet. This cabinet is represented in the cut on the next page.

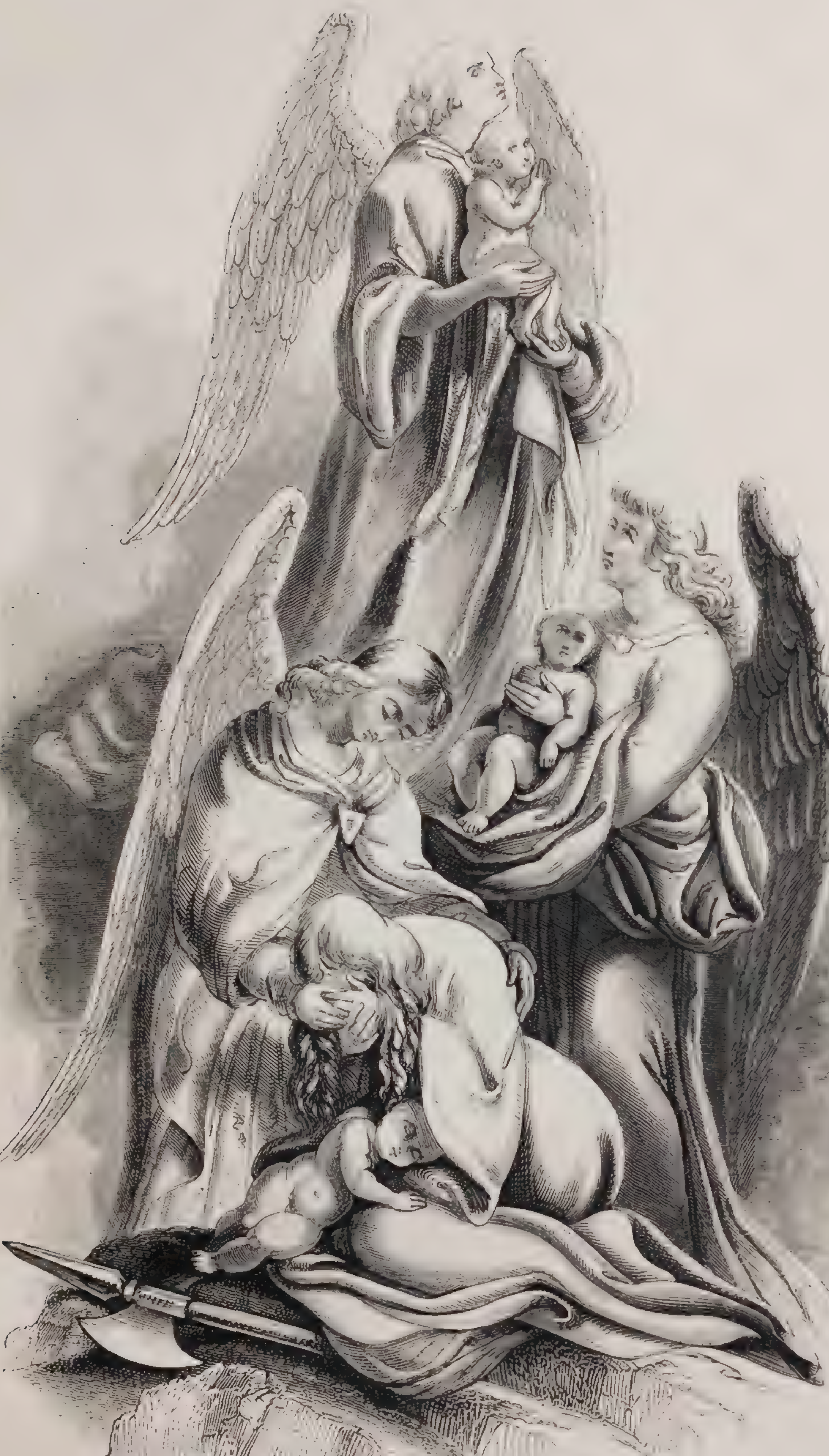
440 Magnée, François, *Brussels.*
Specimens of pictures drawn by the pen.



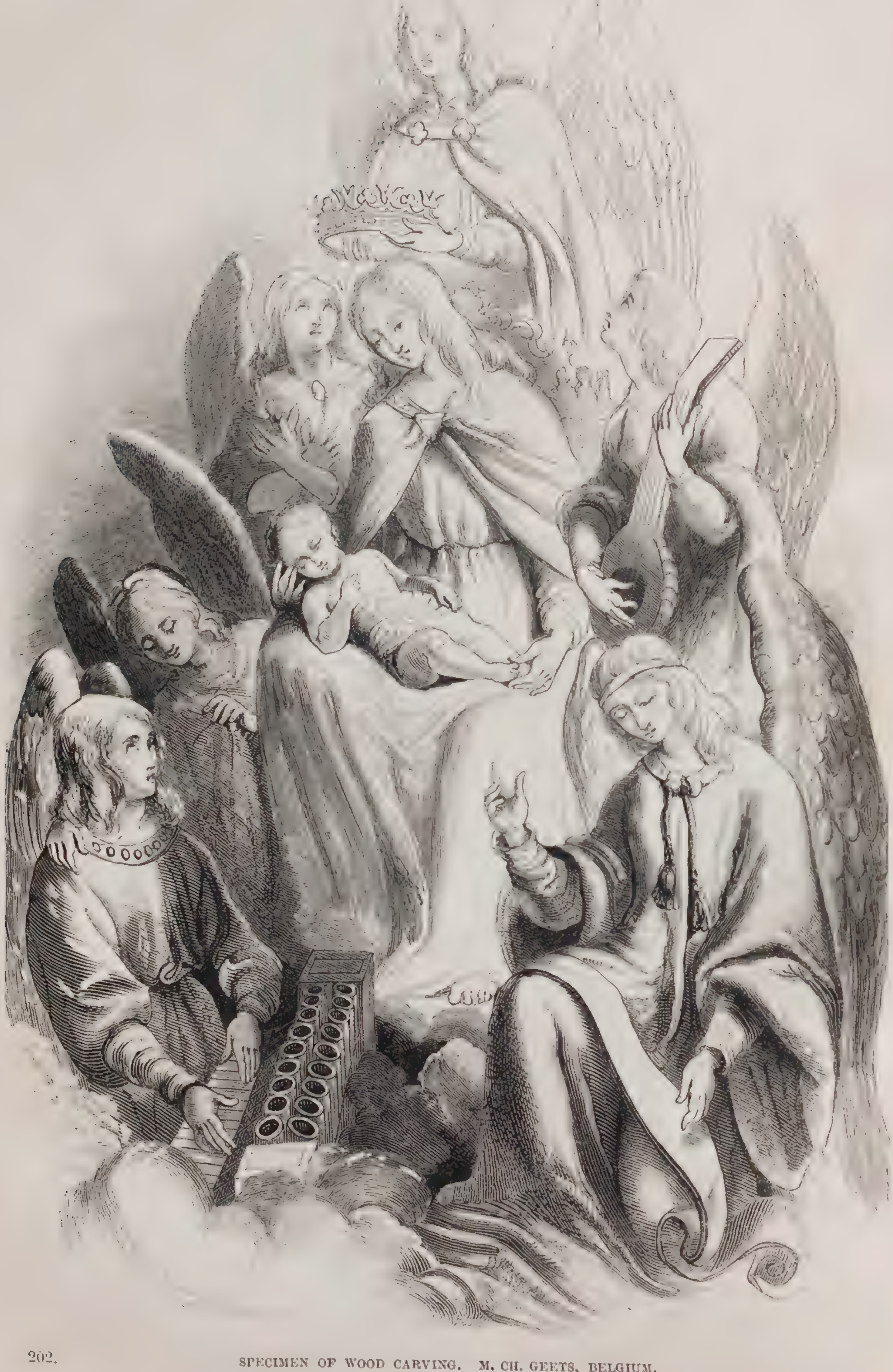
A SCULPTURED MARBLE MANTEL-PIECE. BELGIUM.



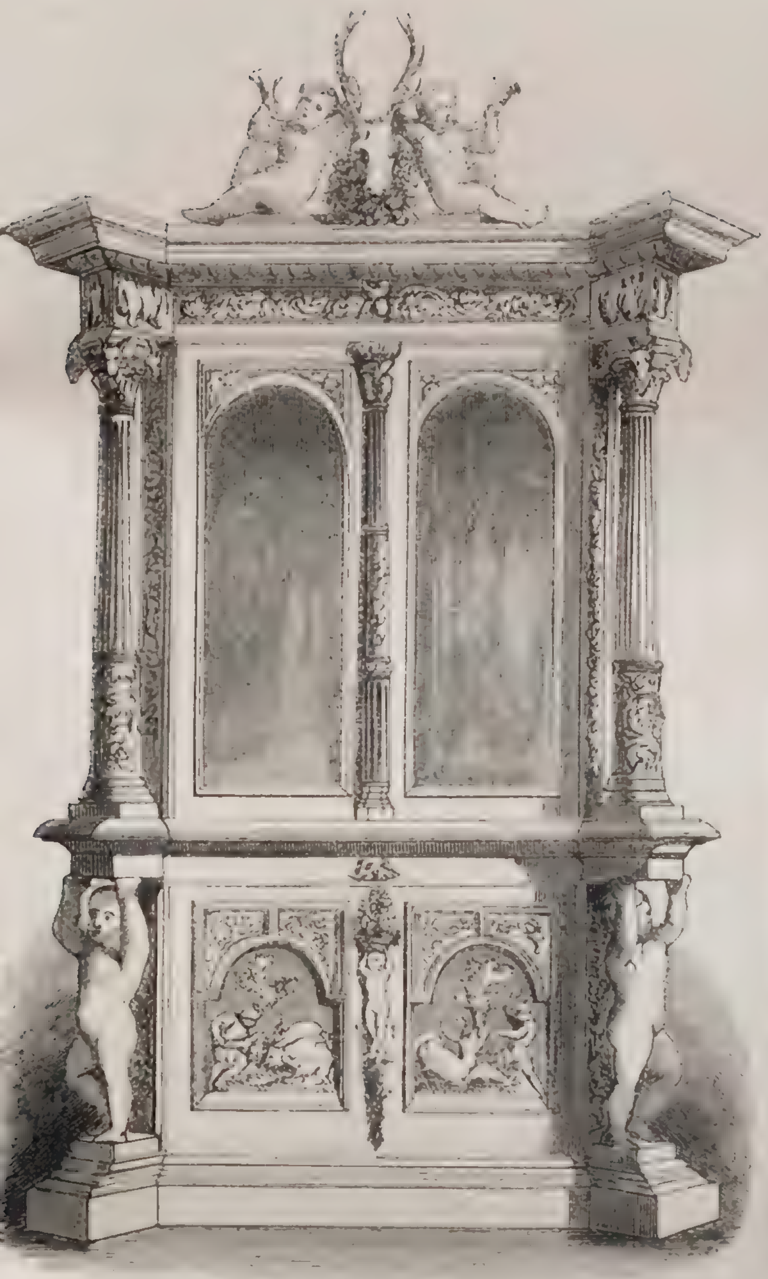
40. STATUE. M. LOUIS TIHOTTE, OF BRUSSELS.



157. A SCULPTURED GROUP IN OAK. M. CH. GEERTS. LOUVAIN, BELGIUM.



202. SPECIMEN OF WOOD CARVING. M. CH. GEETS, BELGIUM.



Beernaert's Carved Oak Cabinet.

441 HART, L. J., *Brussels.*
A frame containing thirty-nine medallions in bronze, including portraits of the Duke of Orleans, the Queen of England, the King of the Belgians, &c.

442 WIENER, JACQUES, *Brussels.* (Agent, Mr. J. Hart, 31 Bevis Marks, City.)
Collection of twenty medallions, representing the principal monuments of Belgium.

443 DU CHASTEL, Count FERD., *Grimberghe, Brabant.*
Specimens of xylopyrography, or the new art of representing objects on wood by means of fire.

444 JAMAR, ALEXANDRE, *Brussels.*
Proof impressions of engravings on wood, from various works published by the exhibitor. Specimens of illustrated books, including "Histoire Belgique," in 2 vols., 8vo., with 250 engravings on wood.

445 DEVILLE-THIRY, —, *Liege.*
Specimens of painting on glass, by a new patent process, invented by the exhibitor, and called "vitrified Devilleotype."

446 AVANZO, DOMINIQUE, *Liege.*
Lithographs, representing the Palace of Liege.

447 JÉHOTTE, CONSTANT, *Liege.*
Frame, containing fourteen bronze medallions of different sizes.

448 DAVELUY-D'ELHOUNGNE, —, *Bruges.*
Specimens of different kinds of lithography, such as crayon pencil drawing, pen drawing, hair-pencil drawing, chromolithographic drawing, &c. Specimens of playing cards, printed by a new patent process. Various other cards, ornamented and printed by novel processes.

449 ROSSEELS, EGIDE, *Louvain.*
Plan of an English garden.

450 GEERTS, CH., *Louvain.*
Various groups, carved in oak. Model of a pulpit, in plaster. Two of these groups are represented in the accompanying Plate.

451 GEEFS, JOSEPH, *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Statue in plaster: The Faithful Messenger.

452 VALERIUS-JOUAN, CHARLES, *Antwerp.*
Plan of the town of Antwerp, with the municipal divisions marked thereon.

453 VANHULLE, H. JEAN, *Rymenam, Antwerp.*
Plan for laying out a kitchen garden.

454 VAN HOOL, —, *Antwerp.*
Picture, in a palm-wood frame. Festoons and flowers in oak, for wainscoting.

455 DE CUYPER, LEONARD, *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Marble statues: Canadian Woman lamenting her Child, and Moses in the Bulrushes.

456 TUERLINCKX, JOSEPH, *Mechlin.*
Marble statue: "The young shepherd Giotto attempting to draw."

457 JOOSTENS, GOMAR, *Essen-lez-Dixmude, West Flanders.*
Pinnacle, in Ordain stone, for the church of St. Nicholas, at Dixmude.

458 VAN DE MEERSCHE, CORNEILLE, *Alost.*
Piece of carved furniture, executed to commemorate the Exhibition of 1851.

459 JACQMAIN, GUSTAVE, *Ghent.* (Agent, M. Cuylits, 55 Gracechurch Street.)
A volume, painted, engraved, and printed, with flowered borders, in mediæval style, by Midolle, being an alphabetical collection of historical initial letters.

460 MARCHAND, ED., *Schaerbeek, Brabant.*
A marble bust, Madonna.

461 JAQUET, JOSEPH, *Schaerbeek, Brabant.*
Groups in bronze: The Deluge, Massacre of the Innocents, and The Death of Abel.
Statue in plaster: Cupid Disarmed.

462 JAQUET, jun., *Schaerbeek, Brabant.*
Plaster statue: The Top-player.

463 JEHOTTE, L., *St.-Josse-ten-Noode, Brabant.*
Marble statue: Madonna. Plaster statue: Cain. This statue is represented in the accompanying Plate 40. Bronze group: Child and Spaniel. Marble bas-relief: Mater Dolorosa.

464 Simonis, Eugene, *Koekelberg, Brabant.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Colossal equestrian statue in plaster: Godefrey of Bouillon. This statue is represented in the accompanying Plate, 81. Plaster statue: Truth.

Marble statuettes: The Happy Child, and The Unhappy Child. These statuettes are represented in the accompanying Plate, 238.

465 Fraikin, Ch. Aug., *Schaerbeek, Brabant.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Plaster statues: Cupid Captive. Psyche imploring the assistance of Cupid, and Cupid in the Cradle.

Plaster statuette: Prayer.

466 Geefs, Guillaume, *Schaerbeek, Brabant.*

Plaster group: The Lion in Love. This statue is represented in the annexed Plate, 234. Marble statuettes: Cupid and Group of Children.

467 Mallet, E. C., *Charleroi.*

Nails, called "Pointes de Paris."

468 Kums, E., *Antwerp.*

Specimens of linens: Westphalia, Schierduck, Holland, Russias, Ravensdock, &c.

469 Ghislain-Dubois, *Binche.*

Specimens of leather straps, or bands from cow-skin.

470 Verberckt, Hippolyte, *Antwerp.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Silver vessel, vase and basket, in Gothic and antique styles.

471 Mackintosh, Théodore, *Brussels.*

Page-holder, for the printing composer, invented by the exhibitor.

472 Wynants, Corneille, *Schaerbeek, Brabant.*

Machine for carving wood, marble, stone, &c., invented by the exhibitor.

473 Muquardt, C., *Brussels and Ghent.*

A volume containing specimens of various illustrated works.

474 Point & Son, *Mouscron, West Flanders.*

Specimens of cast-iron kitchen ranges.

475 Vanderhecht, E., *Brussels.*

Patent mining apparatus, called "Parachute des mines."

476 Lund, —, *Brussels.*

Patent regulating funnel.

477 Bertani, Antoine, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

A mosaic table in straw, ornamented with nine Roman monuments.

478 Bemand, Richard, *Courtrai.*

Specimens of parchment.

479 Lecherf, —, *Brussels.*

Bronze statuette: Rubens, after Geefs.

480 Van Hecke, Ange-Théophile, *Brussels.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Patent apparatus for ventilating mines, vessels, hospitals, barracks, prisons, theatres, factories, schools, churches, workshops, &c.

Patent ventilator, with alternating movement and constant effect, for railway carriages.

New method of recording the results of labour, by mechanical means.

New sounding-line and alarm-bell for vessels.

481 Felhoen-Coucke, Widow, *Courtrai.*

Specimens of damasked and worked fabrics, and ticking.

482 Hubert, Antoine, *Brussels.*

Specimens of chains and crosses, worked by hand and in gold.

483 Saffre, Widow, *Mouscron.*

Stuffs in cotton, wool and cotton, and linen.

484 Pasteyns, —, *Louvain.*

Specimens of scarfs in Mechlin lace.

485 De Pauw, *Ghent.*

Model of a moveable bridge, upon a new plan, being a combination of the fixed and swing bridges.

486 Lantheere, F., & Co., *Ghent.*

Samples of flax-cards on combs.

487 Bobyns, P., *Louvain.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Purified colza oil, of the best quality, for the use of the carcel-lamp. Purified lamp-oil.

488 Boone, Albert J., *Alost.*

Leather for soles, harness, &c. Calf-skin. Varnished calf-skin. Leather for boot-legs, &c.

489 Van Geeteruyen, Casimir, *Hamme, East Flanders.*

Specimens of Indian wheat starch.

490 Browne, W. H., *Brussels.*

A terrestrial globe.

491 Pluys, J. F., *Malines.* (Agent, M. Cuylits, 55 Gracechurch Street.)

Historical church-window, forming a gallery of the ancient Dukes of Burgundy and Counts of Flanders.

Historical church-window, with figures, in the Byzantine style.

Panels, with coloured coats-of-arms. Panels, with coloured medallions of the seventeenth century.

Double entablature, ornamented with imitation medallions of different epochs, intended for an amateur cabinet.

Picture, after Rubens.

492 Wood, William, *Antwerp.*

Specimens of French merinos and white linen, manufactured by Hebbelynck, Ghent.

493 Tiberghien, L. J., *Binche.*

Large curried calf-skins, grey, cream-colour, and waxed. Strong boot-legs and fronts.

494 Dupierry, Ch., jun., *Vielsalm, Luxembourg.*

Specimens of whetstones.

495 Ponseele, Edouard, *Tournay.*

Specimens of wooden shoes of various kinds.

496 Merckx, Mathieu, *Kesselloo, Brabant.*

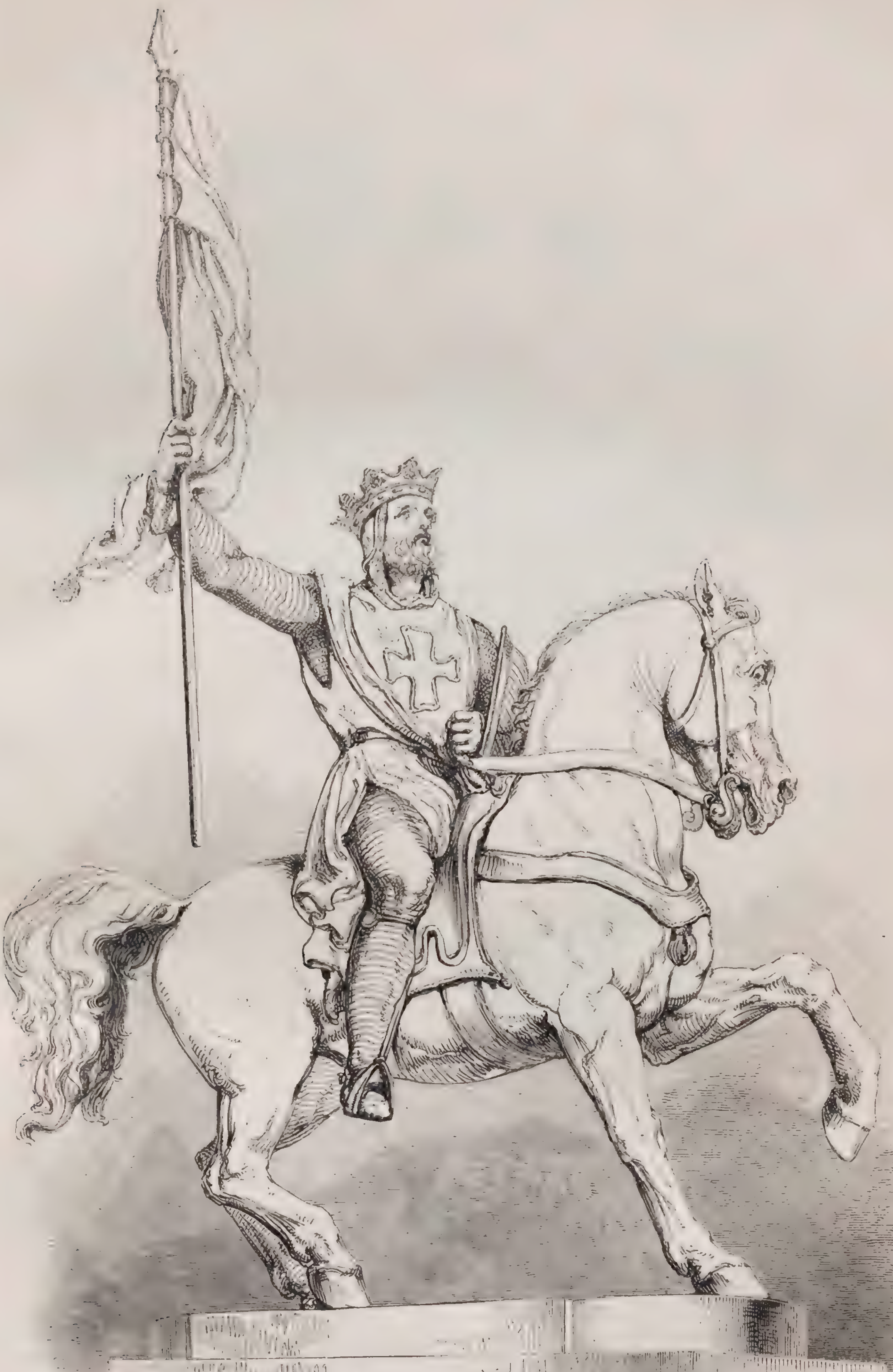
Specimens of winter barley and rye.

497 Scheppers, François, *Loth, Brabant.*

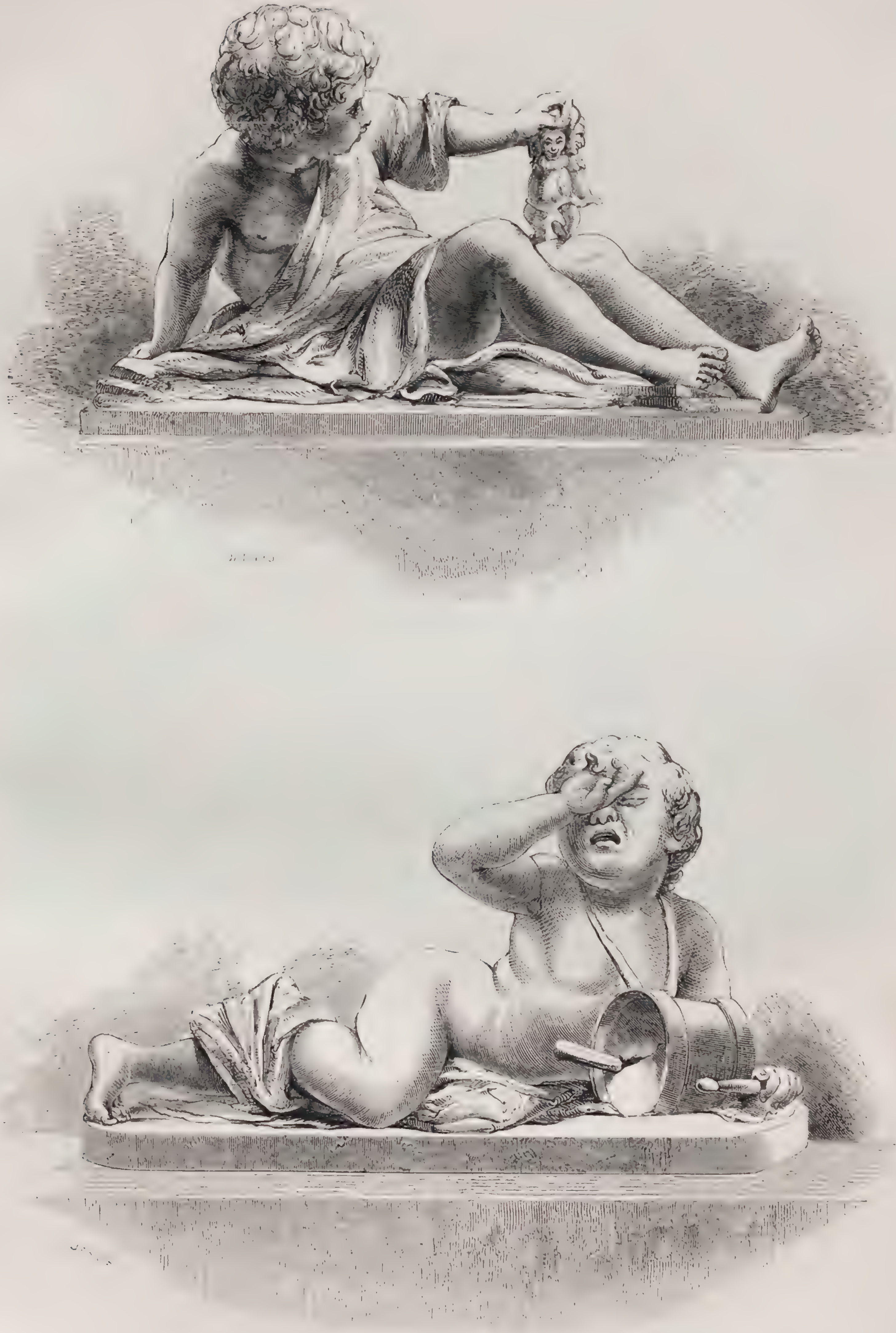
Combed wool, woollen yarn for warp and weft, woollen fabrics, light, plain, dyed and dressed.

498 Brichaut, —, *Schaerbeek, Brabant.* (Agent, M. Cuylits, 55 Gracechurch Street.)

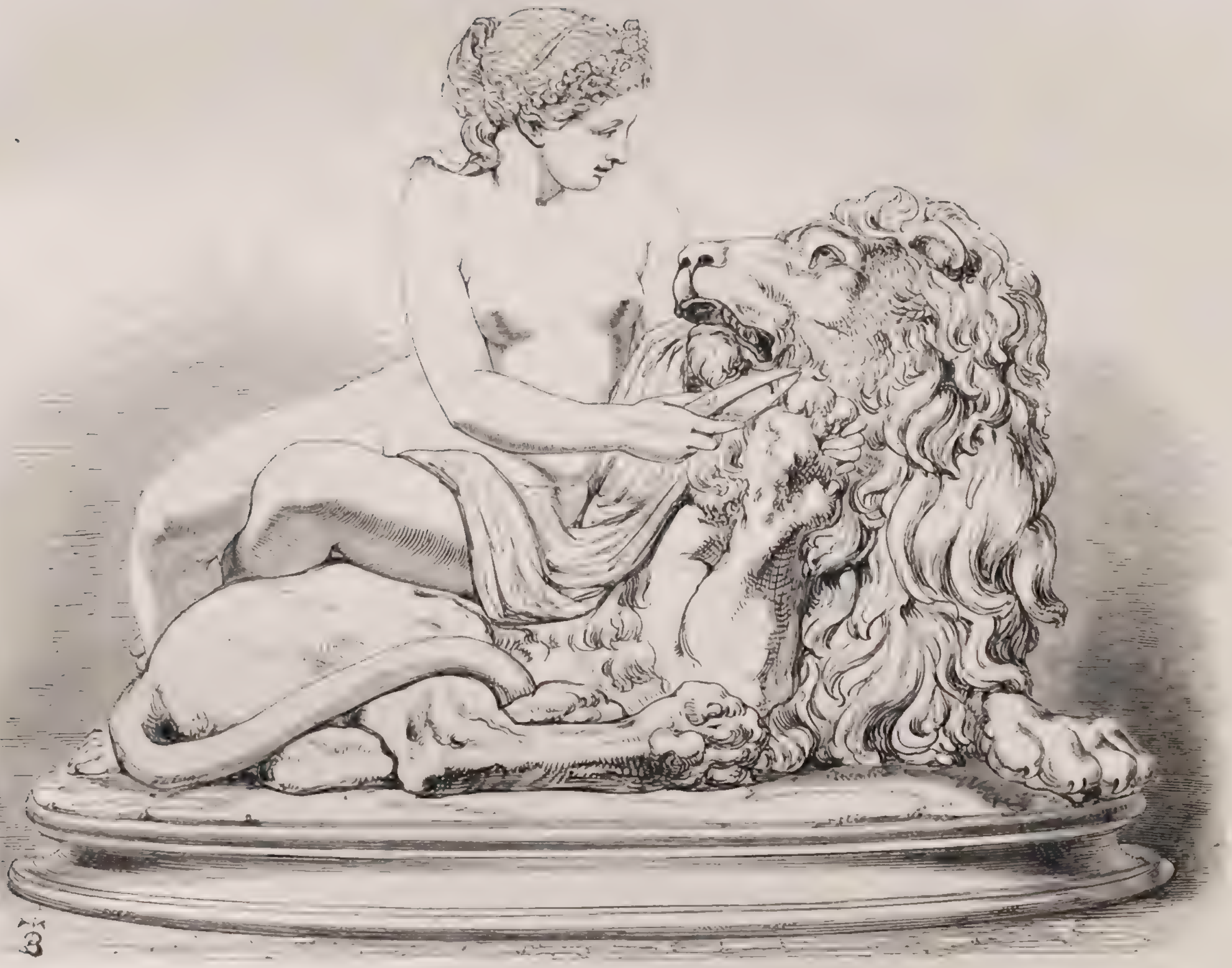
Bronze statuettes, monuments, &c.



81. EQUESTRIAN STATUE OF GODFREY DE BOUILLON. M. SIMONIS, OF BRUSSELS.



HAPPINESS AND MISERY. M. SIMONIS, BELGIUM.



234. GROUP. M. CH. GEEFS. BELGIUM.

499 LACROIX, —, *Molenbeek-St.-Jean, Brabant.*
Harmonic strings for harps.

500 LAVA, DE KONINCK, *Poperinghe, West Flanders.*
Specimens of hops.

501 NOGGERATH, Dr., *Brussels.*
Instruments for introducing resinous vapours into the eustachian tube, through the nasal passages, or into the ear, in cases of obstruction of those parts.

A pair of curved scissors for the excision of the elongated uvula.

A pump for applying compressed air in cases of simple obstruction of the eustachian tube.

502 VAN BURKHOVEN, LOUIS, *Moerbeke, East Flanders.*
Model of an Archimedean screw, with double groove. An Archimedean screw, with triple groove.

503 RENKIN, —, sen., *Liege.*
Patent safety guns and pistols, invented by the exhibitor.

504 SACRÉ, E., *Brussels.*
Balances for chemical analysis.

505 SUERMONDT BROTHERS, *Wandre, Liege.*
Specimens of coals.

506 ROMSÉE, F., *Fléron, Liege.*
Specimens of coals.

507 DANNEAU, D., *Neufvilles, Hainault.*
Cylindric machine for cleansing corn.

508 VAN LOY, FRANÇOIS, *Antwerp.*
A cask divided into five compartments.

509 KESTEMONT, JEAN-BAPTISTE, *Brussels.*
Patent brass suction and forcing-pump.

510 DELSTANCHE, PH., *Marbais, Brabant.*
Patent articulated roller.

A triangular weeding-plough. Double plough. Brabant plough with back harrow.

Patent mole-trap.

Patent straw-chopper.

Oblique five-share weeding-machine, of two-horse power.

A winnowing machine.

Patent machine for cleaning grains and seeds.

511 VAN DEN BRANDEN, J. A., *Mechlin.* (Agent, M. Cuylits, 55 Gracechurch Street.)
Inlaid table.

512 VAN LINDEN PIERRE, 86 *Warwick Street, Pimlico.*
Marble statue: Madonna.

Sculptured marble vase. Subject from Spenser's "Fairy Queen." Four bas relievos: "Cupid trying his Bow." "Conqueror of Strength." "Fidelity the end of his occupation." Surmounted with "Cupid captive to Venus."

LIBERTÉ
ÉGALITÉ
FRATERNITÉ

FRANCE

North and South Areas, A. B. 46 to 48; C. 43 to 53; D. E. 43 to 54; F. to J. 49 to 54; K. 48 to 54; L. to R. 46 to 54; Q. R. 77; S. 45 to 54; 72 to 77.
South East Central Gallery, M. 43 to 57; N. O. 43, 49.
South East Gallery, P. 43 to 58; 71 to 77.
East End Gallery, N. O. 77.

General Commissioner of the French Government in London, M. Sallandrouze de Lamornaix, 12 *George Street, Hanover Square*. *Agents*, Lightly and Simon, *Fenchurch Street*.

A variety of circumstances contribute to render this collection, next to that of the United Kingdom, one of the most attractive and extensive in the Exhibition. The lengthened and successful experience enjoyed by France in exhibitions of national industry gave to the exhibitors an advantage not possessed by the majority of those contributing to the Exhibition, so far, that is to say, as concerned the arrangement and execution of the minor details inseparable from a display of this description. The results of these national expositions of French industry, and their effect upon the industrial progress of the people, and the development of art applied to the things of life, have been unquestionably great, and these are now presented to notice in a palpable form. The constant intercourse between this country and France, with the facility existing in both of the means of transport, seems to account, in some degree, for the large preponderance of French contributions on the Foreign side. But to this consideration must also be added others which have sensibly operated in giving an impetus to the contributors from France, but less strongly affecting those of other exhibiting States.

No class of the Exhibition, considered in its philosophical subdivision, has been left unrepresented by the French exhibitors. In Raw Materials, Machinery, Manufactures, and Fine Arts—the four grand Sections into which the thirty Classes resolve themselves—specimens of every variety are exhibited. The total number of exhibitors amount to about 1,750, and the area occupied by their contributed articles is very large, both on the north and south sides of the Main Eastern Avenue, and in the Galleries. It is to be regretted that some misconception originally existed with reference to this Catalogue, which was with difficulty removed, the result tending, in the first instance, to the production of a very condensed notice of the articles extending little beyond a mere enumeration of the objects. By much exertion, this obstacle to the production of a descriptive catalogue was eventually overcome, and although necessarily much condensed, and assuming, even in its present state, in many parts, the appearance of a summary notice of the objects, this Catalogue wears a very different aspect to that originally prepared. This cause has in some degree also delayed its appearance.

The principal features only of this large and valuable collection can be indicated in this notice. Among the Raw Materials, the beautiful specimens of raw and thrown silk must attract universal admiration. This is a department of industry which is constantly assuming greater importance. The samples of silk wound by modifications of the customary processes are of great beauty; and an interesting specimen of cocoons in the frames in which the silkworms are reared and permitted to spin the wonderful envelope of the pupa, gives a good idea of the manner in which the culture of these insects is carried on. The hemp, wool, and other textile materials exhibited are likewise interesting. The successful application of philosophy to manufacturing chemistry for a considerable time has produced good results in this department of industry. It is a universally admitted fact that, for some of the more delicate chemical preparations, such as vegetable alkaloids, the productions of the French manufacturer excel those of other nations. The grosser products are likewise exhibited: in these, however, the same success is not so manifest as in similar productions of British exhibitors, probably because the latter are generally manufactured on a very large and extensive scale. The cements and various specimens of paints exhibited have their special value and interest. Specimens of metals and of skill in metallic manipulation are also shown,—in particular, some large specimens of beaten copper and rolled brass, and specimens illustrative of the iron manufactures. Articles of prepared food are also largely exhibited.

A good collection of Machinery is likewise shown. It includes, among many objects of interest, a large prime mover in the form of a turbine water-wheel, a mechanical contrivance for the development of power from the descent of water, of recent introduction, and already of extensive application to the cotton and silk factories of France, and to other mills. The power developed by the fluid in motion is very great, and the arrangement of the machine extremely compact and effective. The mules for cotton-spinning, the carding engines for cotton and wool, and the endless paper-making machines, form objects of instructive comparison with the magnificent display of similar machines in the British collection. The kitchen apparatus, boilers, and numerous other machines are likewise of an instructive character. The philosophical instruments and musical instruments, inclusive of the organ in the Nave, form also an interesting group of objects. Optical instruments of different kinds are exhibited in great perfection.

Among the Manufactures, attention cannot fail to be claimed by the gorgeous productions of the silk-looms of Lyons, which are arranged in cases in the Gallery. The cotton manufactures, and those of wool and linen, are not less interesting. Wherever these admit of the introduction of a design, even in the commonest articles, there the peculiar and graceful indications of artistic feeling, which render the patterns produced popular, even among those who may not be able to recognise the cause of their harmony, are manifest. The skilful arrangement of many of these articles adds much to their attractiveness in the Exhibition. The splendid tapestries of the Gobelins, and of other national manufactories, as that at Beauvais, form, perhaps, one of the most interesting features of the whole collection. They are accompanied by specimens also of Sèvres porcelain, the articles in which, inclusive of vases, paintings, &c., are of great rarity and costliness. The furniture exhibited partakes of the usual character of the French productions of this class, and many indicate the employment of talent of a high order in their design and execution.

This collection is extremely rich in those articles which form so large and important a feature in Parisian industry—articles of bijouterie, vertû, &c., and jewellery. The multitude of objects exhibited in this class, and their variety, strongly suggest the idea of a great demand for such elegances, and of the existence of many skilful designers occupied in their production. The beautiful display of jewels exhibited by Her Majesty the Queen of Spain, and the jeweller of that Court, attract universal notice. The specimens of paper and printing exhibited include a number of objects of interest; and the coloured and other lithographs, and stereotypes by new processes, evidence much progress in this department. Photographs on paper and on silver (Talbotype and Daguerreotype) are exhibited, and form a very interesting collection. The French photographers have made great progress in the art of the Talbotype (an English discovery), and beautiful pictures taken by modifications of that process are shown. Those taken on glass plates, of which the positive pictures or proofs only are shown are, in some instances, taken by a process largely employed to obtain photographs for the Royal Commissioners in illustration of the Juries' Reports. Objects of sculpture and of the fine arts are likewise exhibited, and add to the interest of the collection.

The whole collection forms a fit illustration, and also an adequate one, of the present state of the industry of France; and it is interesting to regard it, also, as in some degree offering an exemplification of the effect of exhibitions of industrial products upon the nature and quality of the articles produced. The excellence and abundance of the objects of minute art would appear to indicate a high state of refinement; but their perfection forms, however, an observable contrast to the state of articles of a more ordinary character, and extensive demand. Although much has been done in the improvement of these articles, they do not admit of comparison with the perfect execution and manufacturing skill displayed in those of a more costly description. That improvement in the manufacture of these commoner articles of life, which is now rapidly extending in France, may be in part attributable to the powerful encouragement to the production of this class of objects constantly offered at the National Expositions at Paris.—R. E.

1 Adolphe, Charles, *Mulhouse (Haut-Rhin)*—Manufacturer. (Agent, Mr. Guebin, 8 *Rue de la Bourse, Paris.*)

Pieces of silk and woollen damask, wrought by Jacquard looms.

2 Agombart, P., *St. Quentin (Aisne)*—Manufacturer.

Hydraulic lime reduced to powder by a patent process; suitable for water-works, for inside and outside coatings, and for building purposes.

3 Alboy, L. N., *Bois-Milon, Setz (Oise)*—Manufacturer.

Specimen of a plough of peculiar construction, and other agricultural machinery.

4 Alcan & Locatelli, 28 *Rue d'Enghien, Paris*—Civil Engineers. (Agent M. Koeber, 11 *Queen Street, Golden Square.*)

Various files, manufactured by a new process on the principle of hardening the teeth at the same time that they are cut; patented in France, England, Belgium, and Germany. The French patent is worked by an operative association established in Paris, Rue Philippeaux, Passage de la Marmite.

5 Alcan & Limes, 28 *Rue d'Enghien, Paris*—Civil Engineers. (Agent M. Koeber, 11 *Queen Street, Golden Square.*)

Specimens of dyed and undyed raw silk. Cold-water spun silk. Ungummed and dyed raw organzines. Silk spun from Calcutta cocoons. The samples exhibited are said to be produced by such a simple process and machinery, that after a few hours' practice a person unacquainted with silk spinning will be enabled to spin perfectly. Skeins of silk produced by the old and by the new process.

6 Allix, André Julien, 41 *Rue Montmartre, Paris*—Wax Modeller.

Figures for hair-dressers. Stays and fancy articles.

7 Angrand, Alf., 59 *Rue Meslay, Paris*—Manufacturer.

Specimens of borders in gilt and coloured papers; the bands are for ornamenting bales of linen; the large-sized gilt borders, which can be made a yard long, are used for the frames of mirrors, or for ornamenting apartments.

Specimens of paper for the tops of embossed boxes, and for the covers of books.

Specimens of fancy papers, and various specimens of card-board, for the manufacture of boxes for confectioners and perfumers; likewise paper called "cosaques," used for wrapping sweetmeats; and bands of silver lace-paper, for binding cakes in England and Scotland.

The following is the list of the fancy papers:—1. Gilt and silvered, plain and satin, engraved, figured and laced. 2. Porcelain-paper, figured, printed, painted, and gilt; every kind of ornamental paper used in binding, framing, for fans, boxes for perfumers, glovers, confectioners, &c. In the last century all these papers were unknown; marbled and plain papers being only known, in which England and Bavaria have long excelled. Since 1810, fancy paper-making has become an important industrial employment in Paris.

8 Arduin & Chancel, *Briançon* (*Hautes-Alpes*), *Post Office*—Manufacturers.

White spun silk; produced by the preparation and the carding of waste occasioned in spinning and throwing silk.

9 Arrault, —, 96 *Rue St. Denis, Paris*—Manufacturer.

Fancy papers. Plate ornaments, and shades made of lace-paper.

10 Andreoletti & Son, *St. Lo* (*Manche*), and 167 *Drury Lane*—Machinists and Builders.

Twenty-three models of different apparatus for cooking, distillation, bakehouses, &c.

11 Audot, E. J., Manufactory and Depôt, 81 *Rue Richelieu, Paris*—Manufacturer.

Dressing and travelling-cases of every description, arranged with a view to economy of space, and completely fitted. Gentlemen's dressing-cases of the finest woods, inlaid with marquetrie, and chased silver mountings; with highly finished steel, ivory, and tortoiseshell fittings. Lady's dressing case with five secret drawers, inlaid with marquetrie, fitted with thirty-five pieces in crystal, silver mounted and engraved. Silver wash-hand service. Toilet mirror in ebony, ornamented in silver, chased and embossed. Ewer, cut crystal, solid silver mountings. Vessel for perfumes, solid silver, antique forms, chased and embossed by a new process.

12 Augan, Marcelin, 10 *Rue de Latour d'Auvergne, Paris*—Manufacturer.

Gommeline (artificial gum Arabic), made by a new process, intended as a substitute for gum Arabic for all manufacturing purposes.

13 Auzoux, Louis, M.D., 1 *Rue de l'Observance, Place de l'Ecole de Medicine, Paris*—Inventor.

Artificial models, showing, in the most minute details, the organization of all species of beings. A horse (about 4 feet high). This presents the complete anatomy, comprising more than 3,000 minutiæ, and taking into 200 pieces. The same, showing on one side the muscles, nerves, and vessels of the superficial layer; on the other side, the muscles, nerves, and vessels of the middle layer, and all the organs in their respective cavities. Thirty *maxillæ*, or jaws, displaying correctly the age of the horse at every period of life. Affections of bone in the horse, showing, from the commencement to their full development, the diseases known under the name of splints, spavins, &c. The foot of the horse, showing the disposition of the hoof, of the "podophillous" tissue, of the vessels and nerves, &c.

The complete model of the human body, of life size and composed of 130 parts, which may be detached, exhibiting upwards of 1,700 objects, comprising minute vessels, the muscles, nerves, arteries, &c. A model of a man (3 feet and a half high), consisting of the same number of pieces as the large model. Two models (2 feet and a half high), offering all the necessary details for the medical practitioner. For the lymphatic vessels, the large model of the human body (5 feet 9 inches high), representing on one side all the superficial veins,—on the other, the bones, with the complete vascular net-work of arteries and veins, from the heart to their minutest ramifications, with the nervous ganglia, and lymphatic vessels. Model for the lymphatic vessels (3 feet and a half high), arranged in the same manner as in the large one.

Two models for teaching physiology in colleges, and other establishments (one 6 feet 9 inches high, the other 3 feet and a half), representing on one side the muscles and vessels of the superficial layer, on the other, only the muscles and nerves of the inner layer, besides the organs contained in the splanchnic cavities, embracing the same divisions and details as the complete model. A model, exhibiting all the muscles and vessels of the superficial layer and the organs of the chest and abdomen, each organ admitting of being displaced separately, with the muscles, vessels, and nerves. Several models of the fœtus in various states.

The cerebellum and spinal marrow, with the origin of all the spinal nerves. The cerebrum, cerebellum, and medulla oblongata, without the vessels, for the study of the nervous system in man, and the vertebrata. In this preparation the medullary fibres of the medulla oblongata can be followed from their origin to their termination, each part of the encephalon, admitting of being removed.

The eye, greatly enlarged, with a part of the orbit, the muscles, the vessels, the nerves, the membranes, the vitreous humour, the crystalline lens, &c. The eye, divided in its whole extent by a vertical section. The temporal bone (2 feet long), showing the internal, the middle, and the external ear, in its most minute divisions; the expansion of the auditory nerve, the soft part of the labyrinth, &c. The temporal bone (half the size of the preceding) showing the ear in the same manner as in the larger one. A similar preparation, greatly enlarged, showing the organ of hearing in birds, and in fishes.

Vertical section of the head, greatly magnified, showing the base of the skull, with the eye, ear, nasal fossæ, mouth, pharynx, larynx, and the muscles, vessels, and nerves, in all their subdivisions. A larynx, greatly enlarged, with its muscles, arteries, and nerves.

The *Melonta Vulgaris*, or cockchafer, magnified 12 times, with the muscles, nerves, and viscera. It can be taken into many pieces, exhibiting more than 600 parts in detail. The *Helix Pomatia*, or snail, greatly enlarged (2 feet in length), showing, in all their minute details, the muscles, vessels, nerves, and viscera. The *Hirudo Medicinalis*, or leech (2 feet in length), exhibiting the blood vessels, nerves, digestive tube, muscles, &c.

A collection of models, for the explanation of the principal functions in the animal kingdom, mammifera, birds, reptiles, fishes, mollusca, insecta, and radiata, viz.:—Digestion, circulation, innervation, respiration.

The *Bombyx Sericaria*, or silkworm, considerably enlarged, (about 2 and a half feet in length); the complete anatomy, alimentary canal, muscles, nerves, trachea, &c., showing the apparatus for the formation of the silk.

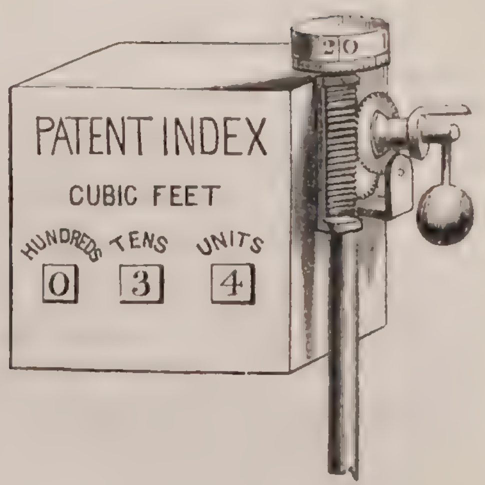
All the corresponding parts of these solid preparations can be adjusted to form a complete animal, and may be connected and disconnected with the greatest facility. They may be used with great advantage in anatomical studies in every country, and at all seasons, being free from anything that might annoy the senses.

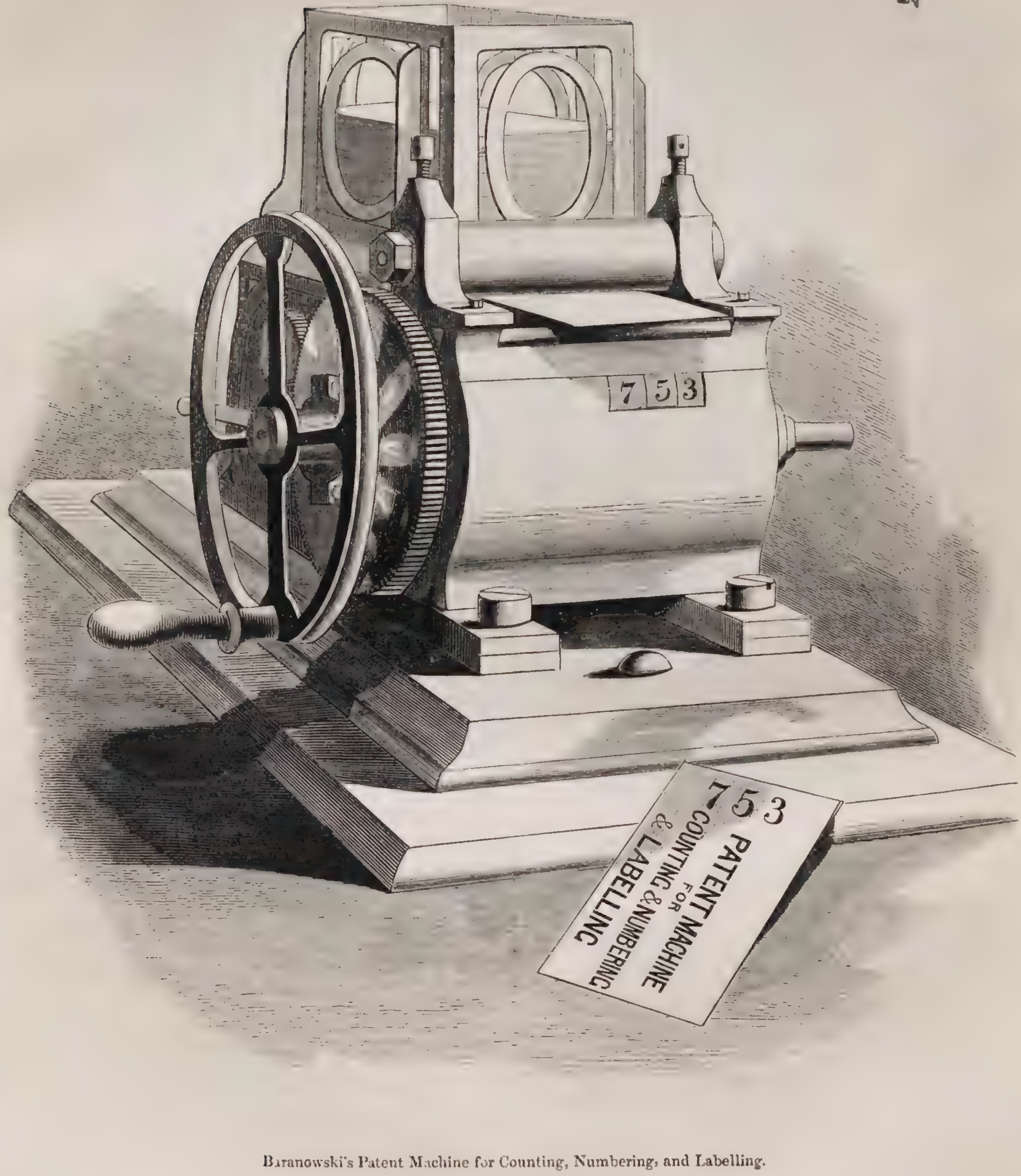
14 Armengaud, —, sen., *Conservatoire des Arts et Métiers, Paris*—Professor.

Designs for manufacturers. Popular works relative to machinery, tools, and apparatus, both French and foreign, in seven volumes, with atlas.

15 Baranowski, Joseph Jean, 3 *Rue de Parme, Paris*—Inventor and Manufacturer. (Agent, W. Lund, 24 *Fleet Street.*)

A portable machine for printing, numbering, and registering tickets for railways, theatres, balls, &c., at the rate of 5,000 per hour. A number of blank cards are placed in the upper part of the machine, and then, by turning the handle, either by the hand or by steam power, the cards are delivered, one by one, ready for distribution, that is, printed from an adopted form, and numbered from 1 to 2,000, 3,000, or upwards. At the same time each ticket is registered as it leaves the machine. The printing, as well as the numbering, is done with common type in different colours; the model exhibited prints in red and blue. Each ticket is further checked by marks or symbols, which



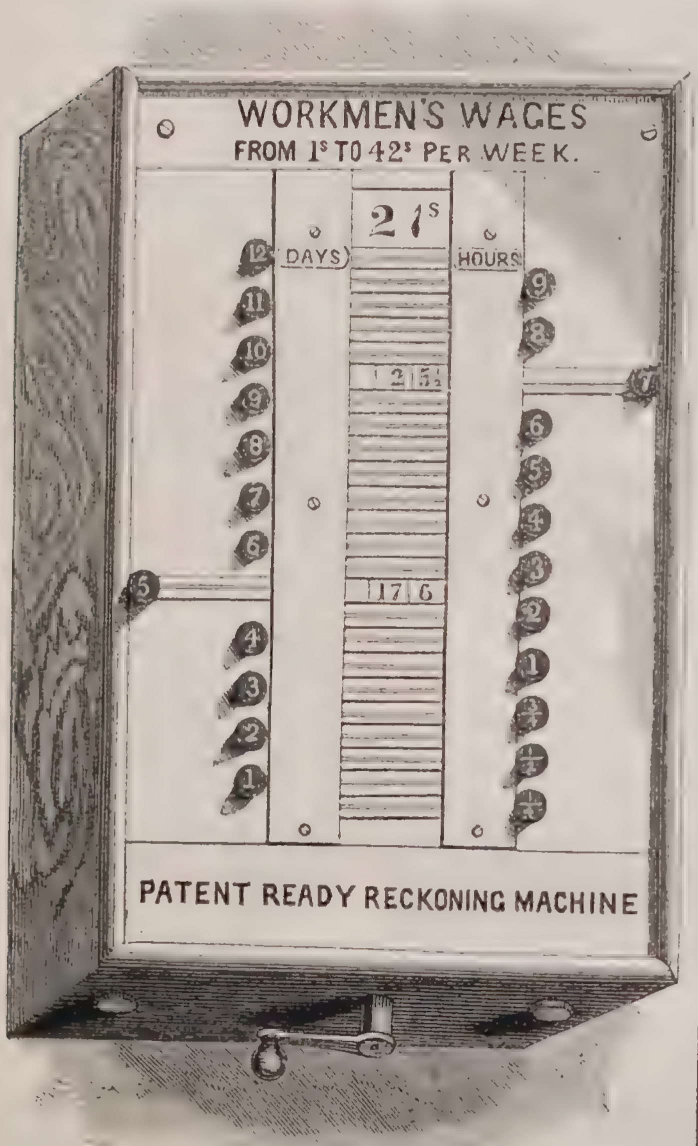


Baranowski's Patent Machine for Counting, Numbering, and Labelling.

may be transposed, to increase the difficulty of imitation or fraud. This machine is represented in the illustration on the preceding page.

Gas meter index, and ballot box, illustrating two other applications of the same invention. This index is shown in the preceding page.

Ready reckoning machine. This apparatus, which is represented in the annexed cut, is applicable to all banking, commercial, and industrial operations. To work it, it is only necessary to turn a handle, and to push or displace one or more buttons, numbered by series. The products sought after appear immediately. These products cannot be questioned or disputed, because they are calculations made and checked beforehand. Moreover, they are controlled by the numbers on the buttons which have been displaced. One of the models shown is for calculating workmen's wages, and another for the rates of carriage of goods or merchandize.



Baranowski's Patent Ready-reckoning Machine.

16 Barrallon & Brossard, *St. Etienne* (*Loire*) —Manufacturers.

Specimens of shaded and printed silks for parasols. Patent embroidered ribbons, dyed and printed after the weaving. A great variety of silks exhibited, principally for their bright colours and shades. Various qualities of plain satin.

The ribbons are manufactured from the raw silk, and are dyed and printed after the weaving. The manufacture of plain ribbons has been much improved by an improved machine, by which several pieces of embroidered ribbon are executed at once, whereas by the old hand-machine only one piece could be made at a time.

17 Bahuet, A., *Beaumont* (*Marne*)—Manufacturer.

Specimens of unbleached and dyed merino fabrics.

18 Bajelaire, Edouard, *Moirans* (*Isère*)— Ribbon Manufacturer.

Satin and taffeta ribbons, woven by machinery in a water-mill.

19 Barbeaux-Lécuyer, J. Louis, *Bazancourt* (*Marne*)—Manufacturer.

Specimens of unbleached and dyed merino.

20 Barré-Russin, —, *Orchamps* (*Jura*)—Manufacturer.

Specimens of hard chinaware, fireproof.

21 Barth, Massing, & Plichon, *Sarreguemine* (*Moselle*)—Manufacturers. (Agents, I. S. de Gaetan & Co., 3 *Bow Lane, Cheapside.*)

Specimens of silk plush, used in the manufacture of hats; exhibited for superiority of colour. The exhibitors manufacture about 140,000 yards of this article per annum, of which two-thirds are exported.

22 Bathier, Victor, *à la Souterraine* (*Creuse*)— Bootmaker.

Wooden shoes of different shapes and sizes, a new invention, made for exportation.

23 Beguin, Antoine, 6 *Rue du Marché, St. Honoré, Paris*—Manufacturer.

Velvet pasteboard. Common pasteboard. Stationery, &c.

24 Bencraft, Stephen, 36 *Rue de Ponthieu, Paris*— Saddler.

Specimens of harness, saddles, horse-collars, &c.

25 Berger-Walter, —, 27 *Rue de Paradis Poissonnière, Paris*—Manufacturer.

Spectacle glasses. Crystal knobs mounted in glass or in metal, for door handles; the produce of the glass works at St. Louis (Moselle).

26 Billecoq, A., 25 *Boulevard Poissonnière, Paris*— Manufacturer.

Embroidered cashmere shawls and scarfs. Cashmere and crape fabrics.

27 Blancher, J. B., *St. Just-en-Chaussée* (*Oise*), and 14 *Rue des Mauvaises Paroles, Paris*—Manufacturer.

Specimens of plain and embroidered net-work; and plain and fancy silk stockings.

28 Blanzy, Poure, & Co., *Boulogne-sur-Mer*—Manufacturers. (Agents in London, J. S. de Gaetan & Co., 3 *Bow Lane, Cheapside.*)

Specimens of steel pens of various descriptions. Of these articles, 20,000 gross per week are produced at the manufactory of the exhibitors.

29 Blech, Steinbach, & Mantz, *Mulhouse* (*Haut-Rhin*), and 37 *Rue de Sentier, Paris*—Manufacturers.

Specimens of printed cotton goods, for exportation.

30 Bleriot & Lemaitre, 81 *Rue de Cléry, Paris*— Manufacturers.

A piece of lawn kerchiefs and several pieces of linen.

31 Robert-Boileau, —, *Pontfaverger* (*Marne*)— Manufacturer.

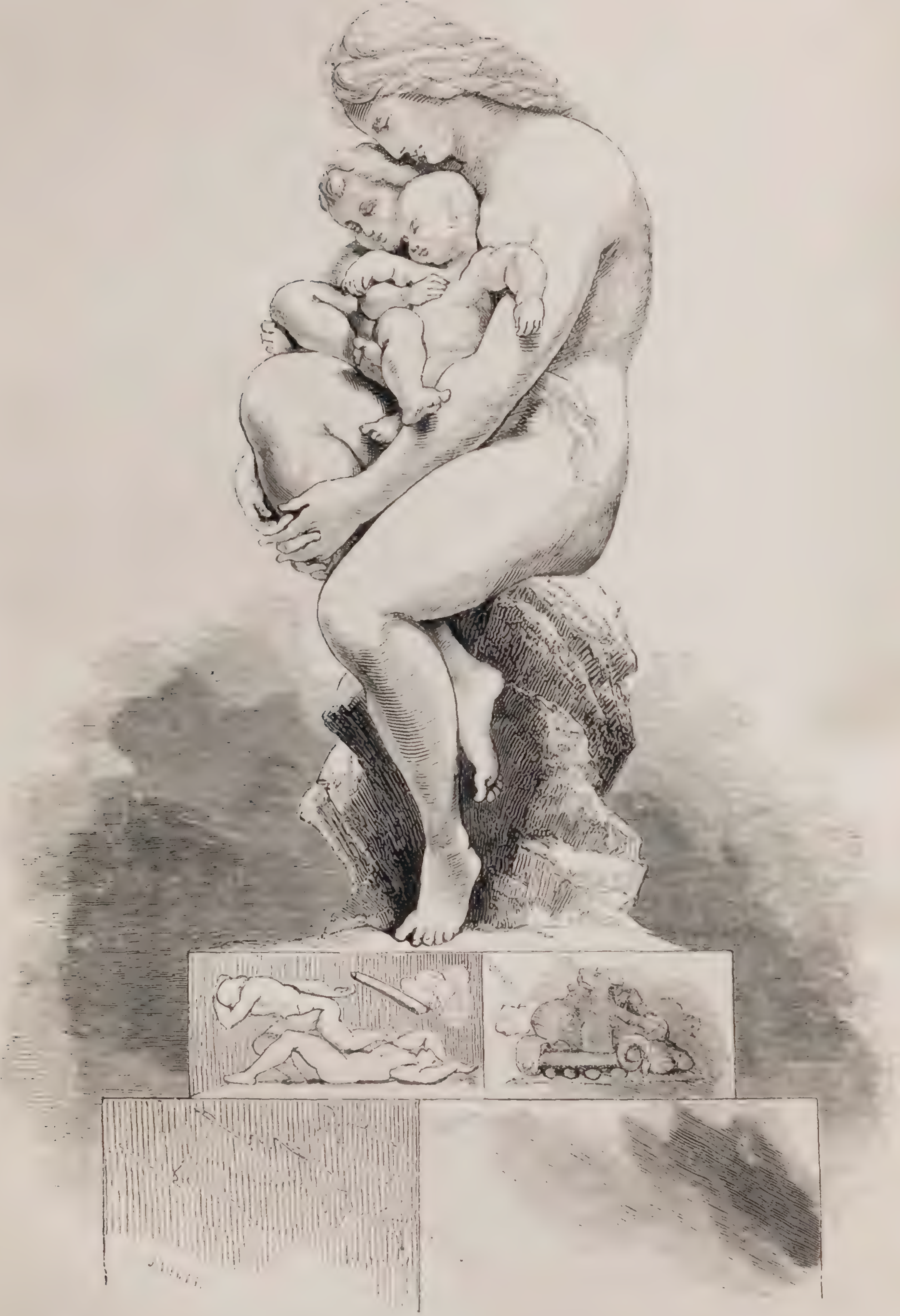
Pieces of unbleached merino.

32 Boniface & Sons, *Cambray* (*Nord*)— Manufacturers.

Specimens of linen fabrics, cambric, and lawn.

33 Bonte, Louis, *Roubaix* (*Nord*)—Manufacturer.

Assortment of mixed fabrics of wool and cotton for trousers.



EVE AND HER CHILDREN. BY M. DE BAY. FRANCE.

34 Bouchez-Pothier, —, *Warmeriville* (*Marne*)—Manufacturer.

Dyed and unbleached merino fabrics.

35 Boyer, sen., & Lacour Brothers, *Limoges* (*Haute-Vienne*)—Manufacturers.

Specimens of flannels and druggets. These goods are spun, dyed, and woven by the exhibitors.

36 Bréauté, E., 11 *Rue de la Monnaie, Paris*—Manufacturer.

Aquarelle card paper, and embossed cards for drawings and frames.

37 Brun, Auguste, *Grenoble* (*Isère*)—Manufacturer.

Machine for cutting out gloves. Specimens of kid gloves in process of manufacture. Dressed leathers.

38 Bruneaux & Sons, *Rethel* (*Ardennes*)—Manufacturers & Machine Makers. (Agents in London J. S. de Gaetan, 3 *Bow Lane, Cheapside.*)

Woollen yarns of various kinds, manufactured on a machine constructed by the exhibitors.

39 Burgun, Walter, Berger, & Co., *Götzenbruck* (*Moselle*), 27 *Rue Paradis, faubourg Poissonnière, Paris,* and 21 *Hatton Garden, London*—Manufacturers.

Specimens of watch-glasses of all descriptions. The exhibitors manufacture about 90,000 per day.

40 Barrere, Benjamin, from Lemercier's, 62 *Rue Mazarine, Paris*—Engineer and Engraver.

Specimens produced by four new engraving and carving machines. These specimens consist of vignettes of microscopical fineness of execution for the prevention of forgery. Various specimens of intricate combinations of curved lines, and specimens of engraving in cornelian, being portraits of Her Majesty Queen Victoria, &c. This process is especially adapted for banking and mercantile houses, and for the purpose of mechanical reproduction of various models and medals, copied from embossings.

41 Barrès Brothers, *St. Julien en St. Alban* (*Ardèche*)—Producers.

Specimens of cocoon and silk winding. Organzine, for manufacturing silk fabrics, plush, satin, figured, and plain ribbons.

42 Bataille, Victor, *Blangy-sur-Brest* (*Seine-Inférieure*) —Manufacturer.

Pyroligneous and other acids. Chemical productions used in manufactures, principally for dyeing and printing various fabrics.

43 Baudon, —, 6 *Rue Neuve-St.-Laurent, Paris*—Wood-stainer.

Specimens of black-wood in veneers and block, and of veneers of various colours, for fancy joiners' work, dressing-boxes, liquor-cases, &c.

44 Baudouin, Antoine Pierre, 12 *Rue de Socrate, Rouen,* and 74 *Rue Richelieu, Paris*—Producer.

Specimen of the application of enamel painting; a new preservative principle for the inside and outside of buildings.

45 De Bay, —, 5 *Passage Colbert, Rotonde, Paris*—Statuary.

Artificial stone, statues, and ornaments. Patent baked clay, capable of resisting all variations of the weather.

A statue of Eve and her children. This statue is represented in the accompanying Plate, 176.

46 De Beaufort, —, 28 *Rue de Bourgogne, Paris*—Inventor.

An artificial foot, applicable in all cases of amputation above and below the knee, and of both legs.

The use of this artificial foot has been introduced into the military hospitals in France.

47 De Beauvoys, Ch., *Seiches* (*Maine and Loire*)—Surgeon.

Beehives and apparatus for apicultural purposes, or for rearing bees.

48 Bechot, jun., 3 *Rue du Pont-Louis-Philippe, Paris*— Manufacturer.

A peculiar description of travelling clocks.

49 Bégou Brothers, 6 *Impasse des Argentiers, Bordeaux*—Manufacturers.

Nutritious pastes: macaroni, vermicelli, riband vermicelli, and stamped. These pastes are transparent, dry and brittle. They are manufactured from the best wheat. They can be preserved throughout a long voyage without deterioration.

Granulous gluten: extracted from wheat. It is cheap and is recommended for invalids. Being well dried, it can be preserved for an indefinite period, and thus becomes an excellent substitute for biscuits on board ship.

Vegetable meal: flour of peas, beans, lentils, French beans, and of British groats. These are dried, pulverized, and prepared with great care. They can be well preserved, and are very economical: in ten minutes, with a small fire, they are cooked without altering their flavour.

Cream of rice: extracted from Carolina rice, and prepared so as to keep in the hottest climates. It is used in making custards, and is also a delicate nourishment for infants.

Flour of starch, extracted from wheat. This starch is extremely white, and has combined with it many other bodies, which render it an excellent starching substance.

50 Belvalette Brothers, *Boulogne-sur-Mer* (*Pas-de-Calais*), and 24 *Avenue des Champs Elysées*—Coachmakers.

Hunting and other carriages made on the English plan.

51 Berard & Co., 44 *Rue Blanche, Paris*—Manufacturers.

Small purified coals and residue of the same. The produce of a system for purifying coals, patented in France, England, Belgium, and Germany.

52 Berliner, Arnauld, 4 *Rue de Provence, Paris*—Professor of Calligraphy.

A large calligraphic picture, a yard and a half long, and a yard broad. The subject of the penmanship is the speech made by Mr. Dupin, President of the National Assembly, on the death of Sir Robert Peel. Annexed are some acts of the great statesman. The style is Milesian; and the whole is written in English as well as in French.

A small ebony piece of furniture, with ornaments on wood; executed with pen and ink. Each compartment contains subjects of a religious kind, embellished with flourishes and curious ornaments, executed in the mediæval style on wood and vellum.

The calligraphic picture was executed chiefly with a common pen. The greatest care has been taken to adopt the style of writing to the subject, and to make it truly an historical monument. The portrait of the statesman is represented through the medium of dotted flourishes; and the French and English allegories, as well as the writing itself, point out his memorable words and deeds. The writing is executed, either on wood or vellum, with indelible ink invented by the exhibitor.

53 Berlioz, F., & Co., 16 *Rue de la Douane, Paris*—Manufacturers.

Silvered plate glasses, with gilt and carved frames.

Unsilvered plate glasses.

These plate glasses are exhibited for the purity and whiteness of their shade, and the regularity of their surface.

54 Berr & Co., 17 *Rue de Clery, Paris*—Manufacturers. (Agents, Graetzer & Herman, 3 *Huggin Lane, Wood Street, Cheapside.*)

Various specimens of embroidery on net and muslin.

55 Berrus Brothers, 73 *Rue Montmartre, Paris*—Producers.

Various designs for cashmere shawls.

56 Berthault, —, *Issoudun* (*Indre*)—Manufacturer.

Parchments of various sorts for bookbinding, boxes, sheaths, printings, &c.

57 Berthiot, —, 5 *Rue Oblin, Paris*—Currier.

Specimens of Paris and Milan leather of a superior quality.

58 Bertonnet, —, 56 *Passage Choiseul, Paris*—Manufacturer.

Three guns to show their different stages of manufacture. Three guns, showing the same in a different style. A dark brown barrelled gun, mounted with platinum. A swivel gun chased and engraved.

A pistol for saloon practice, engraved. Two pistols for saloon practice. A hunting-knife, with dark brown steel handle. A gun adapted for various purposes.

A brace of pistols of improved construction, one of which exhibits the process of manufacture, with boxes and apparatus. A brace of pistols with box. A swivel gun, inlaid in gold, with ebony stock. A gun, with ebony stock, polished and engraved. A gun, engraved in the style of Louis XV. A gun constructed for the use of a person deprived of the right eye. Four guns. A hunting-knife, with handle of green ivory, sheath, &c., engraved and inlaid in gold. Gun-barrel hinged.

59 Bertrand, François, & Co., *Ganges* (*Hérault*)—Inventors.

Fishing-net, for sea-fishing, made by patent machinery with a single thread. Exhibited for simplicity of mechanism and economy of workmanship.

60 Bescher, Rigomer François, 2 *Rue Guénégaud, Hôtel des Monnaies, Paris*—Inventor.

Patent musical compositor. Apparatus of demonstration, representing the musical scale in relation with a pianoforte key-board.

In works on musical composition, the extent and duration of sound, as also their fractional equivalents, are generally represented by conventional signs. The musical compositor is intended to render the comparison of these conventional signs more obvious, and to be a means of producing every possible combination, whether simple or compound. It is an instrument for facilitating the explanation of the principles laid down in the different methods extant.

The extent or division of sound, from grave to acute, is represented on the musical compositor by a finger-board composed of musical keys, which correspond alternately with the lines and spaces placed in juxta-position, and which take the names of the respective keys. These lines and spaces form the musical scale of which they represent the degrees; and these degrees are disposed so as to receive the keys and staves which serve to mark the division of the scale. In explaining the connection which exists between the keys, the distance from one sound to another, and its inversion, the alteration of notes, the formation of chromatic and diatonic scales, in the major or minor modes—in short, everything which refers to the division of sound from grave to acute—the moveable key-board, placed in juxta-position with the musical scale, will be of great utility, having the advantage over the key-board of an ordinary piano-forte, of presenting to the eye the whole of the exercise, whilst the keys were being pushed forward; and remaining in that state, the number of tones or demitones which separate each of the degrees may easily be calculated, and thus by analogy the formation of the same exercise in another key may be facilitated.

The duration of sound consists in placing, from left to right, on the lines, or in the spaces of the staves, and in a prescribed space called a measure, one or more signs called notes, representing by their relative value the number and duration of the sounds to be produced in a specified interval of time. In noting music with the compositor, paper is replaced by moveable staves, which are placed on the musical scale in juxta-position with the key-board. In like manner the pencil or pen is replaced by notes cut in metal, representing every variety of musical value. These notes are contrived so that they may be fixed on the lines or in the spaces of the staves. The musical notes being thus represented, the touch comes to the assistance of the memory and judgment, and as the comparison becomes more obvious, the notes are more easily distinguished from one another, and the possibility of composing and recomposing the bars, in passing progressively from a full note to its smallest fractions, is readily understood.

61 Besnard, Richoux, & Genest, *Angers* (*Maine and Loire*).

Various specimens of hemp ropes and cords of all sorts, for marine, fishing, packing, and for all other manufacturing and commercial purposes.

62 Biber, L., 32 *Rue Hautefeuille, Paris*—Inventor.

Patent clyso-irrigator, or clyso-syphon.

63 Bondon, Louis, 5 *Rue Grange-aux-Belles, Impasse Ste. Opportune, Paris*—Manufacturer.

White and coloured porcelain papers and cards. Stucco-paper and cards of various colours; damask papers; gelatina, rendered impermeable, for boardings and printings of all descriptions, but chiefly polychromography.

64 Bonnassieux, —, 57 *Rue du Cherche-Midi, Paris*—Sculptor.

Cupid cutting off his wings: a figure in bronze, by Messrs. Eck & Durand, Founders, Paris.

65 Blank, J. D., 20 *Rue du Roi de Sicile, Paris*—Inventor.

Specimens of marquetrie and of mosaics in imitation of ivory and tortoiseshell.

66 Blanvin, —, 7 *Rue des Enfans Rouge, Paris*—Manufacturer.

Specimens of round metal mirrors, with stands; embossed frames, with engravings, &c.

67 Bourdaloue, —, Resident Engineer of the Railway du Gard, *Bourges* (*Cher*)—Inventor.

Plan of a double self-acting railway, executed in 1844, by M. Bourdaloue, Resident Engineer of the Gard Railways. By this plan the descent of the wagons, loaded with coal, is made to draw the empty wagons to their starting point from the coal-mine. By this arrangement 20 horses and eight hands were no more required, and the carriage of the coals was reduced from 2*s.* 6*d.* per ton to 3*d.* From 500 to 600 tons are thus carried away daily. The loaded wagons coming out of the mine are impelled by their gravity along the railway. By this diminished gravity, due to the weight of three wagons of coals on the incline, they raise simultaneously three empty wagons from the bottom of the mine shaft.

68 Boas Brothers & Co., 4 *Rue Vide-gousset, Paris*—Manufacturers.

Brocaded cachmere and worsted shawls.

69 Boyer, P. J., *Dôle Jura*—Watch-maker.

Watches not requiring winding up for eight days and for thirty-two days (a patented invention).

70 **Boyer, V.P.**, 38 *Rue Saintonge au Marais, Paris*—Manufacturer.

Various bronze articles:—Clocks, candelabras, statuettes, cups, lustres, and art bronzes.

71 **Boyer & Co.**, 33 *Rue de la Harpe, Paris*—Manufacturers.

Albumen of blood, called *Albuminous serum.* (Patented in France.) This albumen is intended as a substitute for the white of eggs in all its applications, especially for printing on stuffs, clearing wines, &c.

72 **Braun, Charles**, 34 *Boulevard Bonne Nouvelle, Paris*—Designer.

Designs for fabrics manufactured by several Paris and foreign houses. Fancy designs. Designs for ribbons, made by Vignat Brothers, of St. Etienne. Large designs for silk fabrics.

73 **Bredif Brothers**, *Tours.* Depôt, 3 *Rue Caumartin, Paris*—Manufacturers.

Boots, shoes, &c., with improved seams.

74 **Brocchieri, Pierre**, 21 *Rue Louis-le-Grand, Paris*—Inventor.

Concentrated forms of food prepared from the blood of cattle.

[The blood which has served as the subject of the above experiments and preparations, is that of the Mammalian class, in which, as in other "red-blooded" animals it consists of a colourless fluid called "plasma" or "liquor sanguinis," and of minute particles—most of them red, called "blood discs," the rest white, called "lymph-corpuscles." When blood is drawn from the body and left at rest it "coagulates," that act consisting in the solidification of one of the constituents of the plasma, called the "fibrine," with which the blood-discs are entangled, forming the red "clot;" another constituent of the plasma, called the "serum," remains fluid. A great proportion of the plasma consists of water. Blood also contains various fatty matters and phosphorus, and the following inorganic salts, in their proportions in 1000 parts:—

Chloride of sodium	3·6
Chloride of potassium	0·36
Tribasic phosphate of soda . .	0·2
Carbonate of soda	0·84
Sulphate of soda	0·28
Phosphates of lime and magnesia	0·25
Oxide and phosphate of iron . .	·5—R. O.]

75 **Brunier, Lenormand, & Co.**, 55 *Rue Vivienne, Paris*—Manufacturers.

Aromatic vinegar (called *Cosmaceti*), for toilet purposes.

76 **Brunier, —**, 55 *Rue Vivienne, Paris*—Inventor.

Specimens of a new process of gilding upon copper so as to preserve the colour.

77 **Budin, R. A.**, 50 *Rue du Fer-à-Moulin, Paris*—Manufacturer.

Tanned and curried horse hides: especially used for shoe-tops and upper leather.

78 **Budin-Signez, —**, *Beauvais* (*Oise*)—Manufacturer. (Agent, I. S. de Gaetan, 3 *Bow Lane, Cheapside.*)

Woven felts of all sizes, adapted for continuous machines for the manufacture of pasteboard and paper. Camlets of various colours. Light cloth for China.

79 **Burat Brothers**, 12 *Rue Mandar, Paris*—Inventor.

Trusses on a new principle, with eccentric pivot, weighing upon all parts of the cushion.

80 **Caillaux, Alexandre**, Madame, 16 *Passage du Saumon, Paris*—Inventor.

White satin stays. Mohair stays, with patent mechanical busk.

81 **Cabrit & Roux**, *St. André de Valborgne* (*Gard*)—Silk-Reelers. (Agents in Paris, MM. A. Germaine & Co., 30 *Rue de l'Echiquier.* In London, Fordati, Coxhead, & Co., 13 *Old Jewry Chambers.*)

Raw silks: fixed cocoons, white and yellow. The produce of a spinning-mill of sixty frames.

82 **Caillet, Franguevillle**, *Bazancourt* (*Marne*)—Manufacturer,

Specimens of unbleached and dyed merinos.

83 **Castel, Emìle**, *Aubusson* (*Creuse*)—Manufacturer,

Door-curtains, Aubusson fabrics, and in the Gobelin style. Panels of the same description. Sofa and table-covers, and rugs.

84 **Cerf & Naxara**, 17 *Rue St Rémy, Bordeaux* (*Gironde*)—Manufacturers.

Fine paste-board work for holding dried fruits and wedding-presents; toilet and perfume boxes, &c., for home trade and for exportation.

85 **Chartier, P.**, *Douai, Nord*—Manufacturers.

Glass demijohns, enclosed in white wicker (for exportation).

86 **Chatelain & Foron**, *Rheims* (*Marne*)—Manufacturers.

Bolivart flannel. Cloaks. Sultana cloths. Zephyr cloths.

87 **Chenard Brothers**, *Rue du Puits-au-Marais, Paris*—Hat Manufacturers. (Agent, Mr. P. Duperrieu, 17 *Bridge Street, Southwark.*)

Hats made of beaver, musquash, and hare skins. Specimens of beaver and musquash felt for waistcoats.

88 **Cherot & Co.**, *Nantes* (*Loire Inférieure*)—Manufacturers.

Specimens of threads, cloths, and cordings, of Loire hemp. Drawings of a spinning-machine, and a machine for manufacturing ropes. Patented in England.

89 **Chinard, —**, jun., *Rue de Cléry, Paris*—Manufacturer.

A variety of long and square shawls.

90 **Chocqueel, Louis**, *Labriche, near St. Denis* (*Seine*)—Manufacturer.

Printed long shawls, and printed gowns and dresses.

91 **Christophe, L. A.**, *Leschelles* (*Aisne*)—Manufacturer.

Various specimens of wood.

92 **Chapelle, —**, *Rue du Chemin Vert, Paris*—Inventor.

Regulators. Models for casting wheelwork.

93 **Collet, Francis Charles**, *Rue des Vieilles-Andriettes, Paris*—Manufacturer.

Various specimens of lace-work and trimmings.

94 **Constantin, —**, 7 *Rue d'Antin*, and 135 *Regent Street, London*—Manufacturer.

A variety of artificial flowers and branches, and a small tree, artificially perfumed.

[The manufacture of artificial flowers forms one of the most important branches of Parisian industry. The increase it has experienced of late years is to be attributed to the wonderful degree of perfection which has been attained in the imitation of natural flowers. This manufacture amounts annually to upwards of 400,000*l.*, of which more than a fourth is exported.—R. E.]

95 Cornillon, Joseph Honori, 36 *Rue du Temple, Paris*—Jeweller.

Goblets. Dressing-case stand. Etagère. Crystal flagons.

96 Couderec & Soucaret, jun., *Montauban* (*Tarn and Garonne*)—Silk-spinners. (Agent, I. S. de Gaetan, 3 *Bow Lane, Cheapside.*)

Specimens of raw silk. Raw silk fabrics for dressing flour.

97 Courtey Brothers & Barez, *Périgueux* (*Dordogne*)—Manufacturers.

Woollen stuffs, called *Cadis.*

98 Couturier & Renault, *Sarreguemines* (*Moselle*), and 51 *Rue du Temple, Paris*—Manufacturers.

Silk plush for hats. Exhibited for its durability and brilliancy of dye.

99 Cugnot, Amedée, 177 *Rue Montmartre, Paris*—Locksmith.

Various articles of fine and ornamental hardware and ironmongery for buildings.

100 Caillo, jun., & Prin, *Nantes* (*Loire-Inférieure*)—Manufacturers.

Pilchards preserved in pure olive oil—for exportation to America, South Seas, California, Mauritius, and West Indies; the annual amount being 150,000 boxes.

101 De Caligny—Inventor.

Hydraulic apparatus—a simplification of the hydraulic ram; especially adapted for use on small streams of water.

102 Candlot, —, 6 *Rue St. Pierre Popincourt, Paris*—Manufacturer.

Specimens of Parisian wadding prepared by machinery invented and patented by Mr. W. H. Robertson (of the United States), 19 Boulevart Montmartre, Paris. This wadding is carded, felted, gummed, and dried, wholly by machinery, and can be furnished in pieces of any length. Mattrasses of this material are said to be durable and elastic.

103 Colin, —, 30 *Rue du Bac, Paris*—Manufacturer. (Agent, E. Colin, 17 *Weendington Street, Prince of Wales Road, Kentish Town.*)

Patent upright pianofortes. The cord-frame is made of iron to render it inflexible, and capable of resisting the effects of the weather; hence the strings are preserved from the influence of the atmosphere. This renders the harmony more easy and lasting, and the tunes louder and more sonorous; and the instruments lighter than those made of wood, without increasing the cost.

104 Carbonneau, J. B. Charles—Producer.

Wood engravings, for typographical illustrations, being a portion of a work entitled "History of the Painters of all Schools," published by Mr. Armengaud.

105 Carnet, Xavier, 1 *Rue des Jeûneurs, Paris*—Producer.

Designs for shawls, and of cashmere for dresses, &c. Designs for printed fabrics.

106 Carriere Brothers, Curriers, *Amiens* (*Somme*)—Manufacturers.

Curried calf-skins and boot-fronts.

107 Castelle, H., 55 *Rue de la Verrerie, Paris*—Manufacturer.

Waterproof gelatine in sheets. Glass-paper. Crystal-paper. Printed gelatine. Engraved and knotched gelatine. Gelatine for printing, boardings, drawings, engravings, flowers, and decorations for theatres, &c. (New invention.)

108 Cazal, —, 27 *Boulevard des Italiens, Paris*—Manufacturer.

Patent self-opening umbrellas and parasols.

Umbrellas for travelling, with handles capable of being disconnected.

109 De Cavaillon, —, 30 *Rue Taitbout, Paris*—Chemist.

Chemical products, obtained by purifying gas used for lighting. The principle is adopted in France by a great number of manufacturers.

110 Cosnier & Lachese, *Chausse St. Pierre, Angers* (*Maine et Loire*)—Printers.

King René's complete works, with a biography and notices by M. Le Count de Quatre Barbes, to which is added a great number of designs and illustrations by M. Hawke, from the original pictures and manuscripts of King René. Printed at Angers by the exhibitors, in four quarto volumes, large size.

111 Chaleyer, Jules, 24 *Rue du Roi de Sicile* (*Marais*)—Inventor.

Beam and cutting-machine, for army equipments, jewellers, watchmakers, lamps, &c.

112 Chambon, Frederic, *Cheylard* (*Ardèche*)—Manufacturer.

Printed and dyed fabrics. Bandannas of every description.

113 Chambon, Casimir, *Alais* (*Gard*)—Manufacturer.

White and yellow raw silk produced by a cocoon spinning-mill, which yields annually 110,000 lbs. White and yellow, the production of a silk throwing-machine, working yearly 154,000 lbs. of raw silk.

114 Champanhet-Sargeas, M. M. J., *Vals, near Aubenas* (*Ardèche*)—Producer.

Raw and thrown silk for various silk fabrics manufactured in France, England, Germany, and Switzerland. Exhibited for regularity of finish, and quality, cleanliness, colour, tenacity, and elasticity. A thread spun with 50 cocoons has sometimes a tension sufficient to support 19 or 20 ounces avoirdupois. The elasticity sometimes reaches 25 per cent.

[The incessant fluctuations to which the prices of these different commodities are subject, preclude the possibility of assigning their respective values with much precision. It may be interesting to give an approximation to their mean values per pound: cocoons, about 1*s.* 9*d.*; raw silk, 27*s.* 3*d.*; and organzine, 32*s.* 2*d.* Experience has proved that the larger cocoons (such as those which form No. 21 of the samples exhibited) are to be preferred to cocoons of smaller sizes. Their texture, apparently coarser, becomes much finer after the operation of "battage." They separate better; they give less down; and, consequently, their products are superior both in quantity and in quality. These large cocoons are formed by a race of silk-worms the most widely diffused, and the best acclimatized of any within the department of the Ardèche. It necessarily follows that this description of silk-worm is that which is best adapted to encounter the chances of those various maladies which are so often found to destroy the success of the crop.

The samples of organzine, numbered respectively 19, 30, 17, and 18, were produced from raw silk, corresponding with the samples of that material respectively figured 2, 3, 4, 5. The number indicated by the cocoons does not of itself constitute a standard for the regulation of the quality required by the consumer. For this purpose, there are required, in addition, skilful and practised workmen, who employ these cocoons only under certain conditions, determined by their own experience.

In the general dealings of commerce, such raw silks as would correspond with the specimens exhibited under Nos. 1, 7, 8, 9, 10, 11, 12, 13, 14, 16, and 19, are not met with. Their use is rare and exceptional. It has been the exhibitor's object in thus proving that the difficulty which has hitherto been experienced in producing them may be successfully combated, and to direct to these samples the especial attention and practical experience of manufacturers of silk fabrics.]

115 Charbonnier, —, 347 *Rue St. Honoré, Paris*—Manufacturer.

Shower-bath apparatus and syphons. Various trusses, especially for the treatment of hernia.

116 Chardon & Son, 30 *Rue Hautefeuille, Paris*—Producers.

Various engravings and specimens of printing.

117 Charles & Co., 7 *Rue Furstemberg, Paris*, and 22 *South Molton Street, Oxford Street, London*—Manufacturers.

Machines in galvanized sheet-iron or copper, for cleaning linen without washing or the use of soap, and without injuring the articles; for using as baths, which can be heated in 20 minutes; and for cooking roots, vegetables, and grain, for feeding cattle, in a short time and with very little fuel.

One of these machines exhibited is intended to serve as a public bath and wash-house for a village; they contain two baths, and eight divisions for washing linen.

Machines to make ice, ices, sorbets, iced meats, to ice wines and other drinks, without natural ice, in 15 minutes. The congelation is produced without the use of acid, by dissolving in the water a salt which may be re-crystallized an indefinite number of times, with a loss of not more than 3 per cent.

118 Chatel, —, Designer, 2 *Rue de Mulhouse, Paris*—Manufacturer.

Designs for silks, muslin de laine, jaconet, printed cotton, and carpets.

119 Chenot, Adrien—Producer.

Metallic sponges. Iron and steel, produced by means of the said sponges without smelting the ore.

120 Chennevière, D., *Louviers* (*Eure*)—Manufacturer.

Fancy articles in cloth; dyed, carded, spun, and woven in the exhibitor's manufactory.

121 Chevet, Joseph, *Palais National, Paris*—Producer.

Preserved food of all sorts—complete dinners.

Dishes prepared in the first style of French cookery, with gravy and sauces ready for use.

122 Chomereau, —, *Laval* (*Mayenne*)—Producer.

Relievo models in wax of ornaments for jewel-boxes.

123 Chuard, —, 6 *Rue Carnot, Paris*—Inventor.

Safety lamps of a new description for mines, without wire gauze. Apparatus for preventing suffocation and explosions in pits and in all places lit by gas.

124 Cochois & Colin, 7 *Rue des Déchargeurs, Paris*, and at *Croyes* and *Arcis* (*Aube*)—Manufacturers.

Hosiery:—Stockings, socks, gloves, trousers, waistcoats, and night-gowns.

125 Cocu, Alexis, 58 *Faubourg du Temple, Paris*—Manufacturer.

Cashmere cloth for waistcoatings, of all descriptions.

126 Collin, C. E., 7 *Quai Conti, Paris*—Engraver and Draughtsman.

A specimen of hydrographic engraving, on a scale of $\frac{1}{15000}$, comprising a part of the coast of Brittany, from Perros to Port Blanc. Designed to show the method of representing in hydrographic plans, ridges, and sandy and muddy beaches, which are dry at low water, as well as those which are never covered by the sea.

A general map of the south coast of France, on a scale of $\frac{1}{300000}$, showing the whole extent of the coast of France on the Mediterranean, with minute accuracy.

A topographical and hydrographical map of Marseilles and the adjacent coast, on a scale of $\frac{1}{50000}$. A plan on a scale of $\frac{1}{10000}$, and a map, on a scale of $\frac{1}{50000}$, of Nice and the surrounding country.

A plan of the Gulf of Spezia, on the coast of Italy, on a scale of $\frac{1}{13077}$.

A map of the Island of Martinique.

The above plans and maps make a part of those published by the "Depôt Genéral de la Marine de France."

A topographical map of a part of Mount Cenis, surveyed with horizontal curves, lighted according to the system of zenithal light, on a scale of $\frac{1}{80000}$; engraved from a drawing by Mr. C. Pupier.

127 Coupier & Mellier, 20 *Rue Gaillon, Paris*—Manufacturers.

Paper made of vegetable substances, mixed with rag waste.

128 Coppin, Lejeune, *Douai* (*Nord*)—Manufacturer.

Improved hides for cards. Finished and unfinished linings and plates, for wool and cotton cards.

129 Coulaux, sen., & Co., *Molsheim and Klingenthal* (*Bas-Rhin*)—Manufacturers.

Side-arms and articles of hardware.

130 Courtois, Auguste, sen., 28 *Rue des Vieux Augustins, Paris*—Inventor.

Curvilineal piston for brass musical instruments, designed to replace the old piston at right angles. By this invention the piston has greater strength, because it is pierced only on one side, and with three holes, while in others there are four or six. Another advantage is, the absence of screws to fix and work the piston, the cover alone keeps it in its place, and it is therefore more easily taken to pieces.

131 Cropet, —, *Toulouse* (*Haute-Garonne*)—Manufacturer.

Cottage pianoforte. Small mahogany model, with two pedals and eighty-two notes.

132 Croutelle, —, *Rheims* (*Marne*)—Manufacturer.

Spun yarn and sized yarn, for machine weaving. The yarn is sized by a new patent process.

133 Crucifix, Eugene, *Crevecœur, near Beauvais* (*Oise*)—Manufacturer.

Waterproof shoes, boots, &c. The sole is five-fold, made of strong leather, thin leather, thin wood, cork, and thin leather, preserving the feet from dampness.

134 Cudrue, Ferdinand, 58 *Rue du Faubourg du Temple, Paris*—Inventor.

Improved fasteners, for securing windows and courtyards.

135 Curmer, Alexandre, 13 *Rue des Marais, St. Germain, Paris*—Producer.

Specimens of stereotype of papier maché. Of general use among French printers, and imported into England, Russia, and Denmark.

136 **Danjard, L. Ferd. Arm.**, 40 *Rue St. Germain, Paris*—Manufacturer.

Moveable blocks for milliners.

137 **Dautremer & Co.**, *Lille* (*Nord*)—Flax Spinners.

Grey and yellow linen thread.

138 **David-Labbez & Co.**, *Sains Richaumond* (*Aisne*)—Manufacturers.

Unbleached and coloured merino fabrics.

139 **Debray, Constant**, 73 *Rue Rambuteau, Paris*—Manufacturer.

Baskets and lamps of different shapes.

140 **Debuchy, François**, *Lille* (*Nord*), *Rue Basse*—Manufacturer.

Clothes and drills for waistcoatings. New fancy materials for trousers.

141 **Delage-Montignac, François**, 414 *Rue St. Honoré, Paris*—Manufacturer.

Silk threads for fishing lines; fishing nets; sweep-nets.

142 **Delattre & Son**, *Roubaix* (*Nord*)—Manufacturers.

Various fabrics for dresses, of long combed wool and combed merino wool.

143 **Delegue & Co.**, *Saffres* (*Côte d'Or*)—Manufacturers.

Woollen fabrics; combed wool; woollen yarn of different kinds.

144 **Delfosse Brothers**, *Roubaix* (*Nord*)—Manufacturers.

Specimens of fine woollen and common fabrics.

145 **Dervaux-Lefebvre, —**, *Condé* (*Nord*)—Manufacturer.

Chains, bolts, and other articles of hardware.

146 **Dietsch & Co.**, *Strasbourg* (*Bas-Rhin*)—Manufacturers.

Kerseymere cloths. Zephyr cloths of various colours.

147 **Doucet & Duclerc, A.**, 21 *Rue de la Paix, Paris*, and 133 *Regent Street*—Manufacturers.

Specimens of shirting, and various manufactured articles.

148 **Dubar-Delespaul, —**, *Roubaix* (*Nord*)—Manufacturer.

Cotton fabrics for trousers, and men's apparel.

149 **Ducrot & Petit**, 11 *Rue des Fontaines, Paris*—Fan-makers.

Various fans, and pasteboard moulds for folding fan leaves.

150 **Dussol, —**, *Sumène* (*Gard*)—Manufacturer.

Fine yellow and white raw silks; silk gloves of different colours.

151 **Duval & Paris**, 1 *Boulevard, St. Denis*, and 315 *Rue St. Martin, Paris*—Manufacturers. (Agent, J. **Dissard**, 57 *King Street, Golden Square.*)

Bronze and porcelain lamps, with stand, shade, and glass; different articles in bronze.

152 **Dabaret-Tampé, —**, *Précy-sur-Oise* (*Oise*)—Manufacturer.

Specimens of silk buttons of all sorts.

153 **Damainville, —**, *Poudron, near Crépy* (*Oise*). Depôt at *Crépy*—Producer.

Artificial honeycombs. New process of feeding bees.

154 **Dauchel, —, jun.**, *Amiens* (*Somme*)—Manufacturer.

Moquettes for furniture, tapestry and carpets. Large parlour carpet, which, by a peculiar arrangement of the pattern, can be separated to form several small carpets, and put together again at pleasure.

Velours d'Utrecht, or Velours National, a patent fabric composed of silk and mohair; adapted for covering furniture, and for tapestry hangings, &c. Said to be very durable.

155 **Daudrieu, —**, *Pontchartrain* (*Seine and Oise*), and 4 *Rue de Bussi, Paris*—Manufacturer.

New process of paper-hangings, painted by hand, and washable.

156 **Daudville, Alphonse**, *St. Quentin* (*Aisne*)—Inventor, Proprietor, and Manufacturer.

Large gauze curtains, containing the portraits of the Queen of England and Prince Albert, with the arms of England and the emblems of France.

Large muslin and gauze curtains, with ornaments and flowers, and a bouquet in the centre, exhibiting various designs in crochet, shade, relief, guipure, &c.

Large gauze and muslin curtains, containing a group of children, birds, insects, animals, fruits, flowers, and ornaments; exhibited for pattern, relief, pictorial effect, and imitation of crochet embroidery.

Large gauze curtains in crochet, with cascades, fountains, lions, naiads, swans, palms, &c. Various curtains in muslin, gauze, crochet, &c., with designs in flowers, festoons, and other ornaments.

Piece of extra fine muslin, worked in a Jacquard loom, and exhibited for quality and workmanship. Specimens of muslin in relief and in crochet; of jaconet, gauze muslin, tulle and damask; and of ornamented muslins of various descriptions.

157 **David Brothers & Co.**, *St. Quentin* (*Aisne*). Depôt at 20 *Rue St. Fiacre, Paris*—Manufacturers. (Agents, Messrs. **Waltier, & De Vos**, *Angel Court, Throgmorton Street.*)

Various woollen cloths, woven with yarn combed.

158 **Delacretaz & Fourcade**, 18 *Rue Croix de Nivert, Vaugirard, near Paris*—Manufacturers.

Stearic wax candles and acids. Produced by a new patent process.

159 **David, —**, *Chaines, Havre*—Cable Manufacturer.

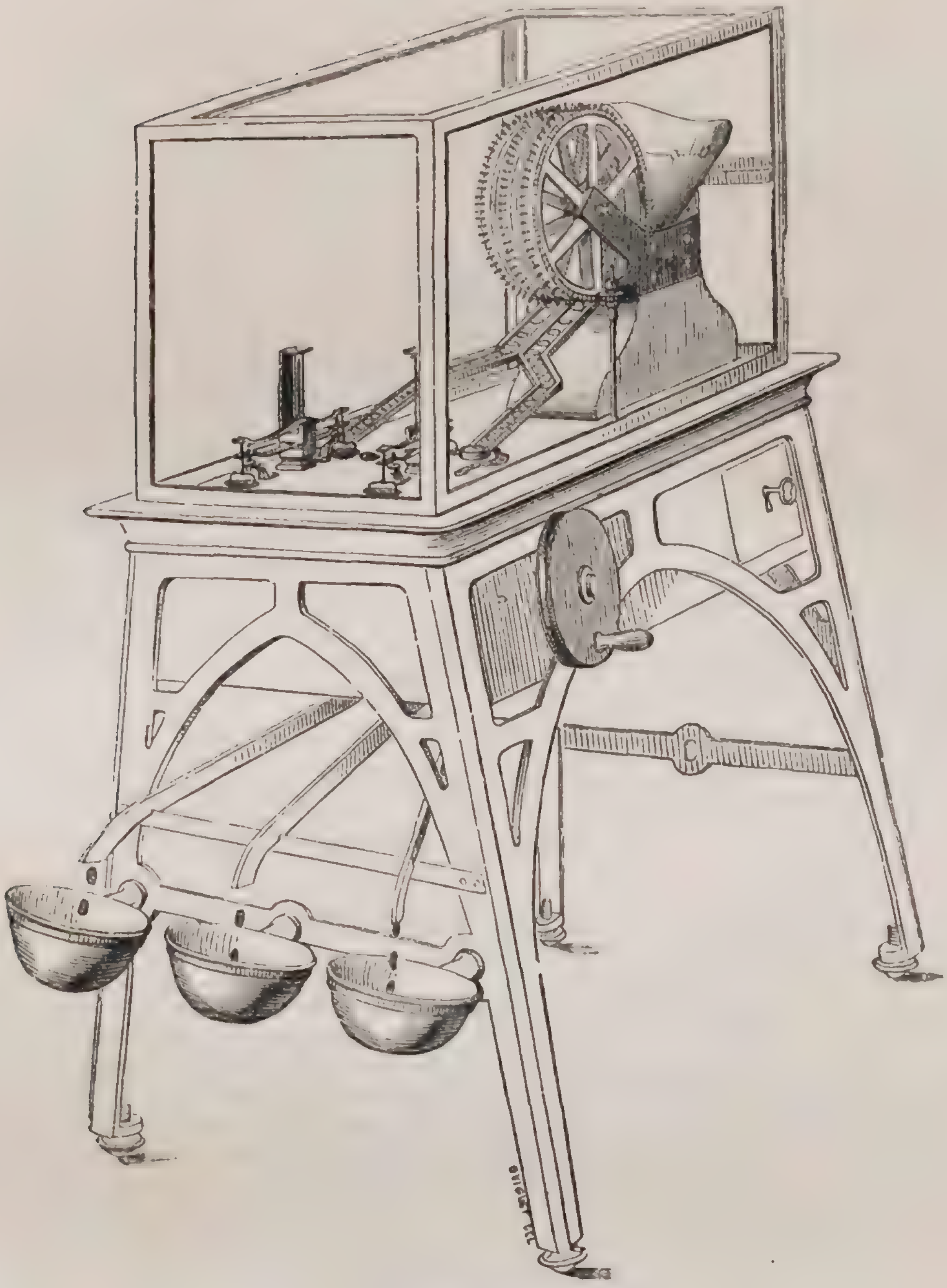
Novel system of pulleys.

160 **Deleuil, L. J.**, 8 *Rue du Pont-de-Lodi*, and 7 *Althorpe Street, Gray's Inn Lane*—Manufacturer.

Philosophical apparatus, delicate balances, Mint-balance, air-pumps, electric and magneto-electric apparatus, &c.

The Mint-balance, represented in the annexed illustration, fig. 1, was invented by M. Seguier, and manufactured by the exhibitor. Its use is not only to weigh coins, but also to arrange them into three kinds,—the correct, deficient, and over-weight, within a given limit. The principle of the machine is such that it will detect the variation from true weight within the limits of two-thirteenths of a grain, and one grain and two-thirteenths of a grain, according to the size of the coin, either above or below the standard. All the coins beyond this limit must be thrown aside in order to be re-cast. The labour of determining the true weight within these limits is performed by workmen at the Mint, in a tedious and irregular manner. By this machine it will be performed as follows:—the coins are thrown indiscriminately into a hopper, placed above the apparatus, and having one of its sides formed by the section of a wheel fitted with projecting pieces of steel of specific lengths, the longest being constructed to prevent the accumulation of the coins, and to lighten the bottom of the great weight which would press on it when the hopper is full; the shorter pieces,

Fig. 1.



Seguier's Mint-Balance.

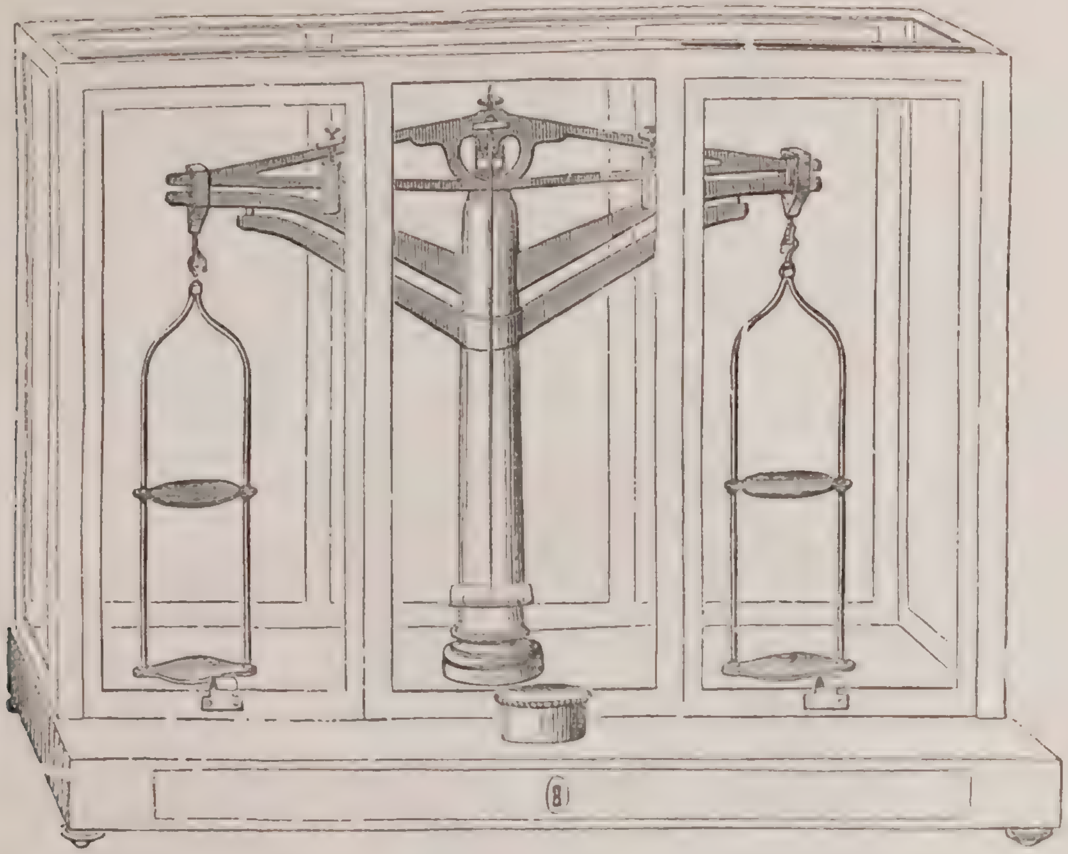
having between their extremities, and the bottom of the hopper only the thickness of a single coin, support the upper coins in order to allow the lowest coin to slide, by its own weight, on to the inclined plane: thus, one by one, they all reach the escapement of the bearer, which permits only one piece to fall, and which, until it is entirely displaced, stops, by its escapement, the whole of those above. In this manner, the coins reach the scale of the balance, when they are next separated into the three different kinds.

The beam, like that of all balances, is furnished with a needle which carries a pallet on its extremity. Above the upright of the balance are placed two small plates which carry each a very fine small steel wire: this wire traverses the support of the beam. On the one extremity of these needles, rest handles which communicate with cross-bars that are stretched by springs; while the other extremity of these handles rest on projecting pieces.

When the whole is in the normal state, the cross-bars are on a level with the inclined planes which convey the coins in their proper directions. If a coin be of the legal weight, the needle above the balance-beam passes between the two small plates above mentioned, and the coin falls into the middle basin, because it has taken the true direction. If a coin be over-weight, the needle inclines to the right, raises the plate, and the attached wires with it; the handles then not meeting the wire, the cross-bar on the right performs its office, stops the passage, and gives another direction to the coin, which then falls into the basin on the right. If the coin is deficient, the plate on the left is raised, the wire which stops the handle performs its office, and the cross-bar on the left stops the passage; the coin then falls into the basin on the left. This operation is performed with such regularity and precision, that a coin can be accurately weighed to the sixty-fifth part of a grain; and the machine can be put in motion by any power, and made to perform with regularity. It can weigh in each scale 50 coins per minute. The machine. represented in the cut, is composed of two balances, and can furnish 100 coins per minute; a result very superior in quantity and in accuracy to that of the best ordinary balance.

The balance, for philosophical purposes, represented in fig. 2, is so delicate that when loaded with about 9 lbs., it detects the sixty-fifth part of a grain, *i. e.*, it turns with the forty-millionth part of the weight which it will bear. It is constructed on the same principle as the great balance which the French Government purchased for the "Conservatoire des Arts et Metiers," and which, loaded with 22 lbs., detects the same quantity, or ascertains the true weight to the same degree of accuracy. This balance is exhibited for simplicity and workmanship; it stands on a solid cast-metal base, which resists the various changes of temperature.

Fig. 2.



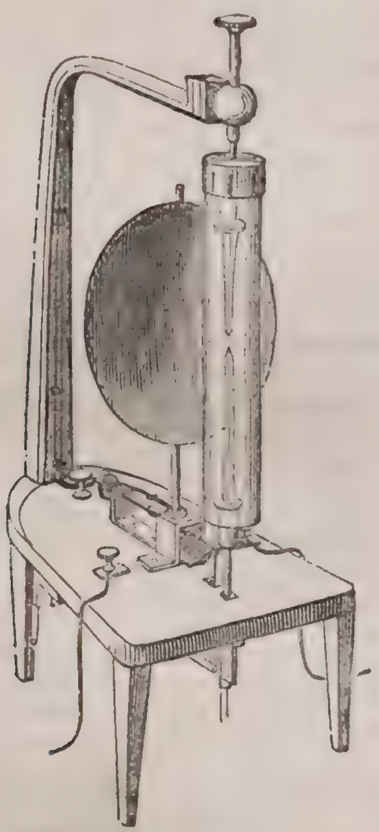
Deleuil's Delicate Balance.

The chemical balances of the exhibitor are also very simple, and turn with the two-thousandth or three-thousandth part of the weight which they will carry. The assay balances are furnished with gilt weights of great accuracy.

The annexed illustration, fig. 3, represents the electric-light regulating apparatus, invented by the exhibitor. It is simple in construction, and may be used in all positions; it is furnished with spherical or parabolic reflectors, and supplied by a modified Bunsen battery of fifty elements, and calculated to produce the most intense light.

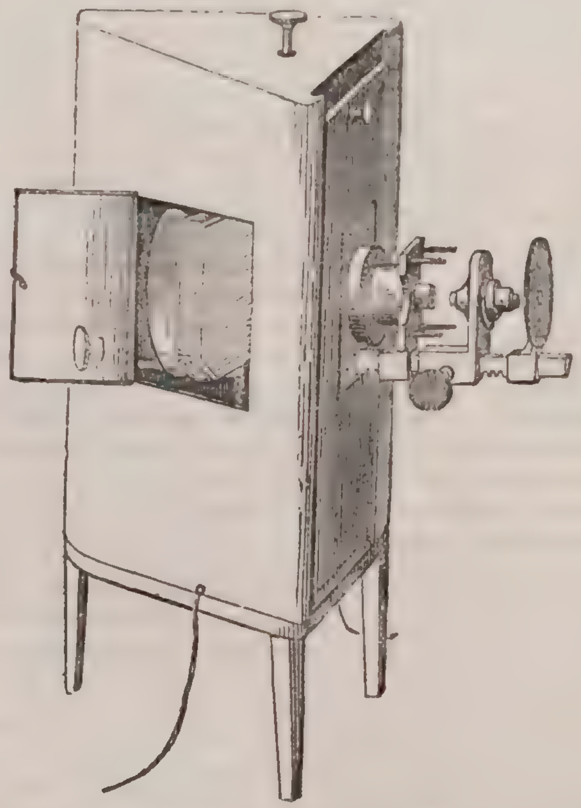
In the illustration, fig. 4, the above apparatus is shown in conjunction with the microscope. It acts with the same electric battery, gives perfectly luminous discs of 11½ feet in diameter; and it is arranged so that, notwithstanding the great focus of heat, bodies can be exposed to its action for a long time in any experiment without undergoing any change.

Fig. 3.



Deleuil's Electric-light Regulator.

Fig. 4.



Deleuil's Microscope and Regulator Combined.

161 **Denis, Amand**, *Notre Dame de Boudeville, near Rouen* (*Seine-Inférieure*)—Dyer.

Pink safflower dyed calicoes.

162 **Dervillé & Co.**, 36 *Quai Jemmapes, Paris*—Producers.

French marbles of various sorts.

163 **De Haussy**, *Rue Lafayette, Paris*—Producer.

Specimens of fashionable designs for panels of painted paper.

164 **Despréaux, Alexr. Adrien**, 6 *Rue Neuve des Petits Champs, Paris*—Manufacturer.

Venetian leathers, silks, dresses, &c. for furniture, tapestry, costumes, and church hangings, &c. Specimens of new patent process for manufacturing stuffs.

165 **Deuzy, P.**, *Athies-les-arras* (*Pas de Calais*)—Manufacturer.

Pasteboard made of pure paste; linen pasteboard; straw pasteboard. Used for binding, packing, &c.

166 **Devisme, —**, 36 *Boulevard des Italiens, Paris*—Gunsmith.

Patent muskets; various fire and side-arms. For France and for exportation.

167 **Dezaux-Lacour**, *Guise* (*Aisne*)—Tanner and Currier.

Tanned and curried hides. Calf-skins for shoes. Calf-skins for spinning-mills, for harness-makers, and for exportation.

[In this manufactory, as the spent bark is otherwise useless, it is employed as fuel for the boiler of a steam-engine which sets in motion the various machinery employed in the processes of the tannery. The power exercised by the hydraulic press is used to remove the superfluous liquid from the spent bark; and as this still contains a small portion of tannin, it is applied afresh. When removed from the press it is as dry as possible, and is immediately fit for use as fuel. The principle of tanning adopted is that of filtration; and very strong infusions of bark are used, obtained by process of decoction, the water being heated economically, by directing the waste steam into the infusion-tank.—R. E.]

168 **Dillenseger & Patry**, 8 *Rue Frépillon, Paris*—Manufacturers.

Achromatic opera glasses. Gold, silver, tortoise-shell, buffalo, sham-gold, and steel spectacles. Hand and quizzing glasses of every description. Patented.

169 **Drouin & Brossier**, *Labriche, near St. Denis* (*Seine*)—Manufacturing Chemists.

Specimens of chemical products: oxymuriate of tin, bichloride of tin, stannate of soda, red prussiate of potash, red prussiate in powder, caustic potash, carbonate of potash, carmine of indigo, carmine of safflower, cochineal ammoniaca, extract of Campeachy, extract of Cuba, extract of Fernambouc, and extract of logwood.

Chemical compositions for printing silk, cotton, silk and cotton fabrics, &c.

170 **Dubois & Son**, 31 *Rue de Cheverus, Bordeaux* (*Gironde*)—Tanners and Curriers.

Specimens of boot-legs. Calf-skins, rough, white, and black.

171 **Duchenne, —**, M.D., 35 *Rue Louis-le-Grand, Paris*—Producer.

Volta-electric apparatus, and double-current magneto-electric apparatus. Inventions executed and exhibited by Messrs. Charrière and Deleuil, surgical instrument makers, Paris.

172 **Duchesne, —**, 16 *Rue Croix des Petits Champs, Paris*—Producer.

Preparation for artistical and monumental painting; applicable for flag-stones in damp places.

173 **Ducroquet, Pre. Alex.**, *Rue St. Maur, St. Germain, Paris*—Organ-builder.

A church-organ, of 20 stops, in an oak carved frame; Gothic style, with detached key-boards, containing the following stops:—

The lower keys — great organ CC to C, in all five octaves.
Open diapason.
Bell flute.
Dulciana.
Stopped diapason.
Double-stopped diapason.
Principal.
Sesquialtera.
Trumpet.
Double trumpet.
Clarion.

The upper keys — swell organ CC to C, in all five octaves.
Open diapason.
Stopped diapason.
Principal.
Harmonic flute.
Viola di gamba.
Trumpet.
Hautbois.
Bassoon.
Cor, Anglais.
Pedals CCC to C, two octaves.
Open double diapason.
Ophicleide.

This instrument offers the following peculiarities:—

1. The reed-stops of the great organ are established on a separate wind-chest, and are supplied with air more highly compressed than for the other stops.

2. The stop named "Bell Flute," or "Flute à Pavillon," is a recent invention of the builder; the peculiar form of the pipes produces a great increase of power, combined with the full and melodious quality of sound so indispensable in the diapasons.

3. Harmonic flute, a stop in which each pipe gives the octave of its fundamental sound, as in the upper notes of the flute.

4. Cor-Anglais, a free reed-stop of a peculiar form.

5. The stops of the upper keys are enclosed in a swell-box, in order to produce the effects of crescendo and decrescendo.

6. The swell-stops can be combined with those of the great organ in three different ways:—firstly, in unison; secondly, in octaves above; thirdly, in octaves below. These different combinations are effected by the pneumatic levers, an apparatus in which the compressed air of the bellows adds its pressure to that of the fingers of the performer, who is thus relieved of four-fifths of the resistance which exists in the ordinary constructions. This system has been successfully applied within the last ten years to the principal organs in France.

This instrument is represented in the illustration in the next page.

174 **Dufour & Son**, *Lille* (*Nord*), *and* 40 *Rue de Paris*—Manufacturers.

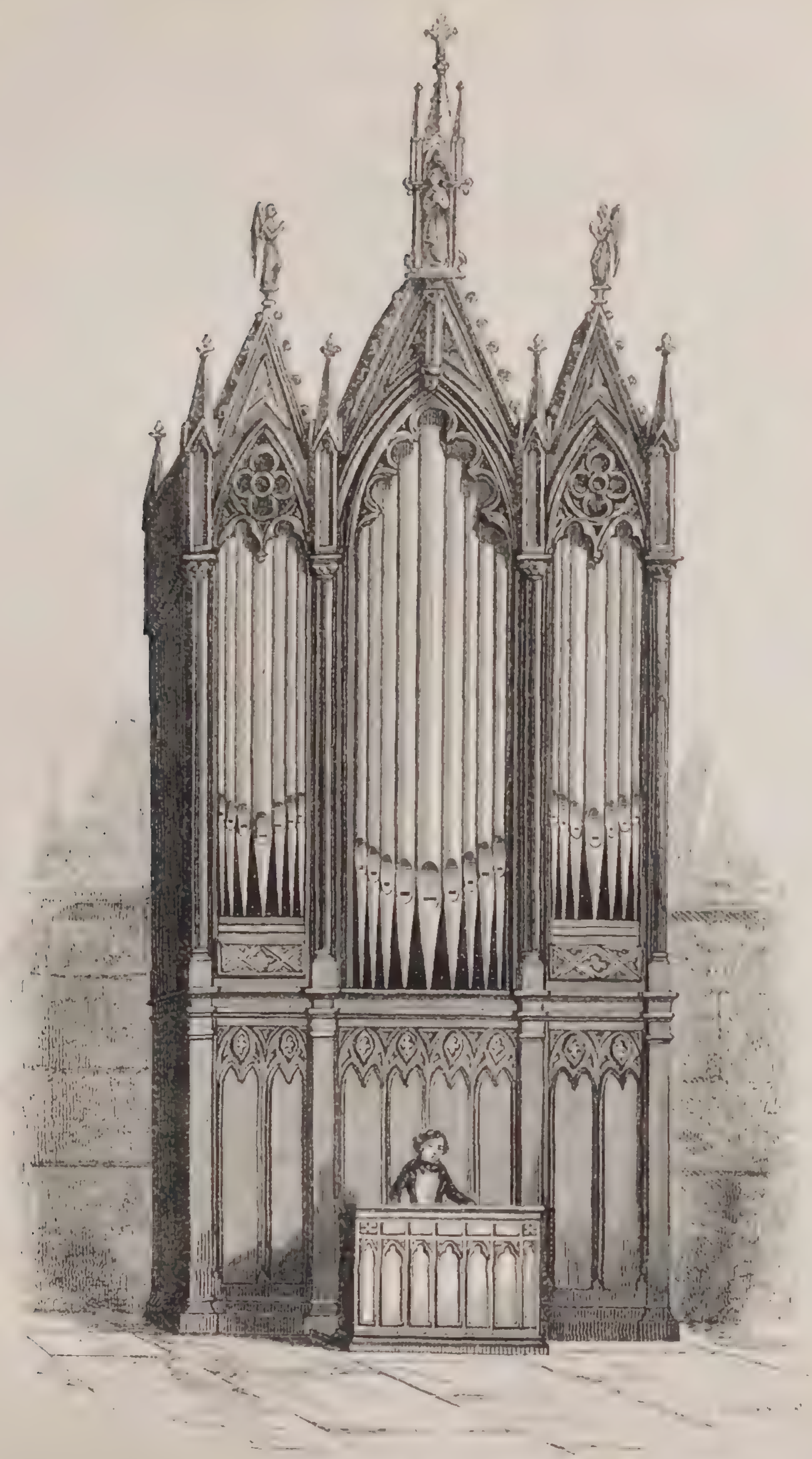
Patent mechanical brush for polishing waxed floors, requiring but a simple movement of the arm, and attended with very little fatigue.

175 **Dumaine, Xavier**, *Tournon-sur-Rhône*—Manufacturer.

Samples of yellow raw silk; and of wrought silk, known by the name of two-thread organzine, produced from cocoons at the exhibitor's establishment. This silk is used in the manufacture of rich stuffs, ribbons, crapes, and satins, at Lyons and St. Etienne.

176 **Dumeril, Son, & Co.**, *St. Omer* (*Pas de Calais*)—Manufacturers.

Clay pipes, patented; and pipe-clay statuettes. Samples of various articles in clay.



Ducroquet's Church Organ.

177 **Dumortier, Lewis**, *Rousbecque, near Lille (Nord)*—Producer.

Samples of raw flax, French growth, retted in the river Lys (Nord), crop 1849.

178 **Dumoulin, Sophie**, 44 *Rue Basse du Rempart, Paris*—Inventor.

Stays without gussets. Patented invention.

179 **Delvart, —**, *Zouques (Pas-de-Calais)*—Clockmaker.

Astronomical clock.

180 **Dupont, Auguste**, 3 & 5 *Rue Neuve St. Augustin, Paris*—Manufacturer.

Solid wrought and cast-iron ornamented bedsteads. Spring mattresses. Patented.

181 **Dupont, Paul**, 55 *Rue de Grenelle St. Honoré, Paris*—Producer.

Specimens of typography, including statistical tables and official documents.

Manuals, official treatises, and various periodical publications. Various impressions in lithography.

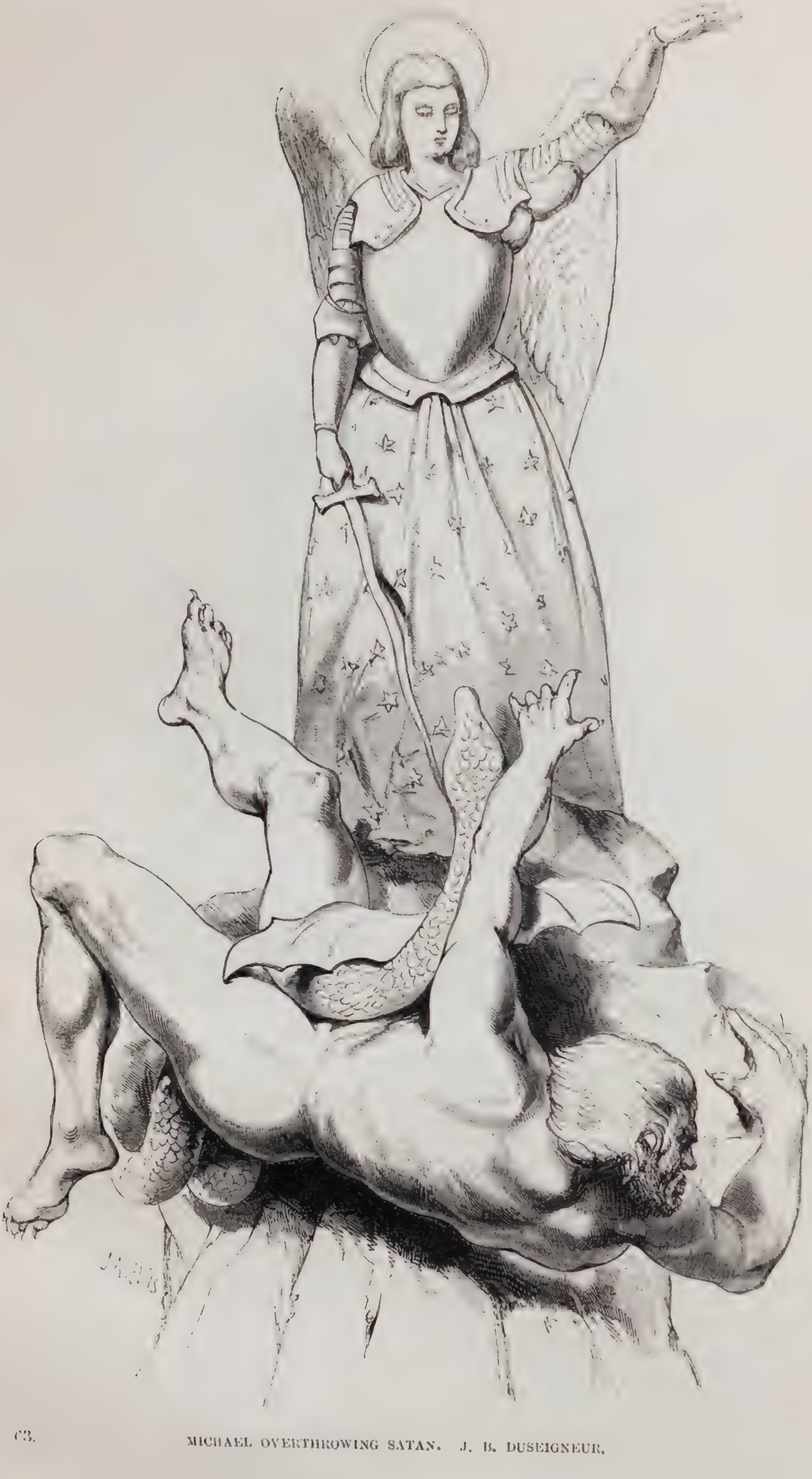
Specimens of litho-typography, being a reproduction, on stone, of old books, engravings, and writings, by a system invented by the exhibitor.

Specimens of stone stereotype, being engravings on stone by a chemical process, to supply the place of engravings on wood for illustrated works.

Samples of French lithographic stones.

182 **Duport, Victor**, 16 *Rue des Francs-bourgeois St. Marcel, Paris*—Producer.

Hides (called *mastodontoïdes*), of a size as large as those of the antediluvian animals called *mastodontes*.



63. MICHAEL OVERTHROWING SATAN. J. B. DUSEIGNEUR.

By means of the exhibitor's patent process of splitting hides, and of a certain preparation, in a single piece, hides nearly double their natural size are produced. They are particularly applicable for covering billiard-tables, or other large surfaces.

183 **Dupré, Jean François**, *Forges-les-Eaux* (*Seine-Inférieure*)—Manufacturer.

Green copperas, sulphate of iron. Metallic salt, especially adapted for dyeing purposes.

184 **Dupuis, J.**, 22 *Petite Rue St. Pierre Amelot, Paris*—Manufacturer.

Specimens of marble chimneys.

185 **Derriey, C.**, *Rue Notre Dame des Champs, Paris*—Type-Founder and Music-Printer.

Specimens of types of various sorts. Moveable music types, of a new description.

186 **Durand, —**, *La Sauvetat du Drob* (*Lot and Garonne*)—Manufacturer.

Stove-oven, on a new principle, patented. Reduced model of the working apparatus, one-third of its size.

187 **Duseigneur, Jean Bernard**, 36 *Rue de l'Ouest*—Sculptor.

A colossal group in plaster: Michael, conqueror of Satan.

> * * * * "The sword
> Of Michael, from the armoury of God,
> Was given him, temper'd so that neither keen
> Nor solid might resist that edge."
> *Milton*, "*Paradise Lost*," Book vi.

This group was executed at Paris, and is represented in the adjoining Plate (63).

188 **Dietrich & Son**, *Niederbonn* (*Bas-Rhin*)—Manufacturers.

Specimen of a cast-iron statue. Sheet of cast iron, 7 feet by 2 feet, and $\frac{1}{8}$ inch thick. Ornamental iron casting, with names of the exhibitors. Two boxes containing 11 specimens, and two others containing 24 specimens of iron casting. Dishes, stew-pans, and various articles of wrought iron.

189 **Duval, Achille**, *Caen* (*Calvados*)—Producer.

Yellow and white silk yarn, especially adapted to lace and blonde manufacturing.

190 **Evrot, Claude Nicolas**, *Charmes* (*Voges*)—Manufacturer,

Imitations of different marbles, done by means of oil-stucco. An entirely new process.

191 **Emmerich & Goerger, Son**, *Strasbourg* (*Bas-Rhin*)—Manufacturers.

Black, grey, and metal-hue morocco skins.

192 **Engelmann & Graf**, 12 *Rue de l'Abbaye, Paris*—Producers.

Specimens of patent mechanical process for lithographic printing in colours.

193 **Frère Eustate**, *of the Institute of Brothers of Christian Schools at Lille* (*Nord*)—Inventor.

Cereal and green herb-mowing machine, invented by Frère Eustate, and executed by Albert Dutriez, his pupil.

This machine is a carriage surmounted with four scythes. Two of these scythes are placed horizontally, and are moved by wheels acting on each other, and, passing over two others having the form of an angle or fork, they thus mow down what is embraced by the latter.

At the head of the carriage is an adjusting screw, which permits the cutting to be performed higher or lower. To the side of the carriage is fixed a stopper, which thrusts back the corn or grass as it is cut. This machine is exhibited for execution and economy of time. Its advantages are best appreciated when employed during unsettled weather. The machine is of working dimensions, and is made of ash, and cast and wrought iron.

194 **Frassin, —, jun.**, *Reims* (*Marne*)—Manufacturer.

Woollen fabrics, cashmere, and valentia waistcoatings.

195 **Forgeot, E., & Co.**, *Saleux, Thil, near Amiens* (*Sömme*)—Manufacturers.

Spun goat hair. Skeins and reels of double-spun goat hair. Raw and combed goat hair.

197 **Fayolle, L. T.**, 180 *Galerie de Valois, Palais National, Paris*—Producer. (Agent, M. Deschamp Legrand, 57 *Frith Street, Soho Square.*)

Crosses, of the various French and foreign orders, made of gold, silver, and imitation metal. Paste jewels, embroidered ribbons, and decorations of all sorts for freemasons.

198 **Féau-Béchard, Victor Amédée**, *Passy-les-Paris* (*Seine*)—Manufacturer.

Woollens and cashmeres, dyed in various colours. Designed for manufacturing Cashmere shawls and fancy articles.

199 **Felix, Alexandre**, 40 *Rue St. Honoré, Paris*—Manufacturer. (Agents, MM. Graetzer & Hermann, 8 *Huggin Lane, Wood Street, Cheapside.*)

Fans of all descriptions. Wedding dresses and other articles, rich style. Jewellery, and French skins for fans.

200 **Ferouelle & Rolland**, *St. Quentin and Tarare*. Depôt, 8 *Rue du Sentier, Paris*—Manufacturers.

Blinds and figured articles for furniture. Plain and figured muslins, tartalanes. Fancy stuffs for dresses, &c.

201 **Fauquet-Lemaître, —**, *Bolbec* (*Seine-Inférieure*)—Flax Spinner.

Tow threads; linen threads; warp and weft for power-loom weaving; weft of cotton waste.

202 **Fauvelle, Delebarre**, 10 *Boulevard Bonne Nouvelle, Paris*—Comb-maker.

Tortoiseshell and buffalo-horn combs.

204 **Flaissier Brothers**, *Nimes* (*Gard*)—Manufacturers.

Carpets of different descriptions; Wilton carpets, &c.

205 **Fontana, Mrs.**, 41 *Rue des Marais, Paris*—Manufacturer.

Pencils for painters in miniature, water-colour, architecture, and china. Gold and silver prepared for ornamenting china.

206 **Fortel, Larbre, & Co.**, *Reims* (*Marne*)—Manufacturers.

Stuffs for waistcoats, dresses, cloaks, and paletots.

208 **Froment, C.**, 15 *Rue Neuve St. Méry, Paris* Manufacturer.

Wooden shoes of different shapes.

209 **Feyeux, —**, 10 *Rue Taranne, Paris*—Manufacturer.

Pastes, &c., nutritious meals, chocolates.

210 **Fieux, Son, & Co.**, *Toulouse* (*Haute-Garonne*)—Tanners and Curriers.

Various sorts of leathers, for saddle, harness, shoemakers, &c.

211 **Fiolet, Louis**, *St. Omer* (*Pas-de-Calais*)—Manufacturer.

Specimens of pipes made of clay.

[The exhibitor manufactures yearly above 200,000 gross of pipes, either plain or varnished, differing in size, form, and length, according to the demand. They are made of 1,200 different shapes, plain or ornamented, representing historical or fancy figures, animals, &c. By means of an enamel invented by the exhibitor, brilliancy can be given to the plainest pipes.

Crucibles, fire-proof bricks, of all shapes, dimensions, and weights, for constructing ovens, furnaces, vaults, tiles, square flat tiles, &c.

The work is composed of 11 subdivisions, as follows:—1. The moulding. 2. The polishing. 3. The rubbing and packing. 4. The enamelling and baking. 5. The carpentry. 6. The brick and crucible making 7. The carving. 8. The forging. 9. The sawing. 10. The engraving. 11. And the drying.

The following quantities of materials are employed in the manufacture:—Clay for pipes, 1,540,000 lbs.; clay for crucibles and bricks, 396,000 lbs.; potters' earth, 198,000 lbs.; oak and other fagots, 220,000; oak wood, 458 cubic yds.; pit-coals, 8,250 bushels; coke, 660,000 lbs.; iron and steel, 3,300 lbs.; cast iron, 6,160 lbs.; copper, 2,200 lbs.; white wax, 440 lbs.; Marseilles soap, 440 lbs.; oil, 15 tuns; enamels of all colours, plain or powdered, £400; deal boards, of all thicknesses, from the North, for making boxes, £1,000; nails, of all sorts, 4,840 lbs.; hay, for packing up pipes, 55,000 lbs.; wheat chaff, for packing up, 12,000 sacks.]

212 **Firmin-Didot Brothers**, 56 *Rue Jacob*, *Paris*—Printers, Booksellers, and Paper Manufacturers.

Books and various publications. Henrici Stephani Thesaurus Græcæ Lingua; Ducange, Glossarium Mediæ et Infimæ Latinitatis; Bibliotheca Scriptorum Græcorum; Trade Directory, &c.

[The establishment of the exhibitors gives employment to 900 workmen, and their mills furnish five tons weight of paper of all kinds per day.]

213 **Flamet**, —, jun., 87 *Rue St. Martin*, *Paris*—Inventor and Manufacturer.

Elastic stockings without seams, for varicose veins.

214 **Fleury, P. F.**, *Teste de Buch, near Bordeaux* (*Gironde*)—Chemist.

Purified marine turpentine, produced by a new process for purifying the raw turpentine found in the wastes of Bordeaux. This turpentine is exhibited for its clearness, transparency, and drying qualities. It is of great utility in the composition of varnishes, and it can be manufactured at less than half the cost of the turpentines of Chio, Venice, Strasbourg, Sweden, and Boston.

215 **Flobert**, —, 3 *Rue Racine*, *Paris*—Gunsmith.

Guns, muskets, and pistols, constructed on a new patent principle adopted by most of the gunmakers of France.

218 **Froely, Antoine**, 37 *Rue Battant*, *Besançon* (*Doubs*)—Manufacturer.

Various files made of French cast steel; some of which are cut by the hand, others by machinery, by a process improved by the exhibitor.

219 **Fromage, Lucien**, 5 *Rue des Petites Eaux*, *Darnetal* (*Seine-Inférieure*)—Inventor.

Power-looms for weaving, improved by the exhibitor. For weaving Rouen and Scotch articles.

220 **Fromont & Son**, *Chartres* (*Eure and Loire*)—Engineers. (Agent, E. **Oppenheim**, 33 *Bouverie Street*.)

An improved double turbine, on Fontaine's principle. This engine is represented in the accompanying Plate 212 and illustrations.

This turbine possesses the following advantages over the ordinary water-wheel, that it requires no accelerating gear, the driving shaft moving with a velocity of 100, 150, to 200 revolutions, according to the machinery, per minute. A special building being unnecessary, the economy becomes considerable, and in large factories it attains a very high ratio. In proof may be mentioned the two turbines supplied to the furnaces of Rachecourt-sur-Marne, near St. Dizier. It required the power of 140 horses, upon a fall of 3 feet 15 inches, reducing itself sometimes to 2 feet. The two turbines were placed under ground, beneath the flatting machines, and only required for each a canal of 16 feet 3 inches wide; whilst to give the same results, water wheels would have required a canal of 97 feet 6 inches wide, therefore effecting a great saving.

The double turbine is adopted in rivers where the tide is variable. These machines are now made with independent compartments, that is to say, composed of wheels working together or separately, and constructed so that the compartment, when not required, is detached from the other wheels which continue to work singly. In this manner, in shallow waters, the maximum of momentum is obtained.

By an application of the governor of Watt, the velocity of the machine is regulated. In testimony of the efficiency of these engines, the following facts may be stated.

The turbine of the flour-mill of Vadenhay, near Chalons-sur-Marne, gives an effective power of from 78 to 79 per cent. upon 6 feet 3 inches of fall. The experiments by which this amount of effect was determined were made by Mr. Taff, Professor of the School of Arts and Sciences; Messrs. Alcan and Grouvelle, Engineers; Mr. Ball, at Pontaudemer; Raffray, at Angers; Leenhart, at Sorgues; de la Portilla, at Seville, &c.: the results have all exceeded 70, and several of them have been as high as 78 per cent.

Those of Mr. De la Cuetara, at Palencia (Spain), have given 76 per cent. The turbine of Brunet and Company, at Pontaudemer, although with a small fall of 2 feet 7 inches, has given 70 per cent. of effect.

The turbines of the National Manufactory of Tulle, St. Chamas and Chatellerault, have shown an effect of 73 per cent., and a constant velocity, notwithstanding the variations of the fall, of from 4 feet 11 inches to 11 feet 6 inches.

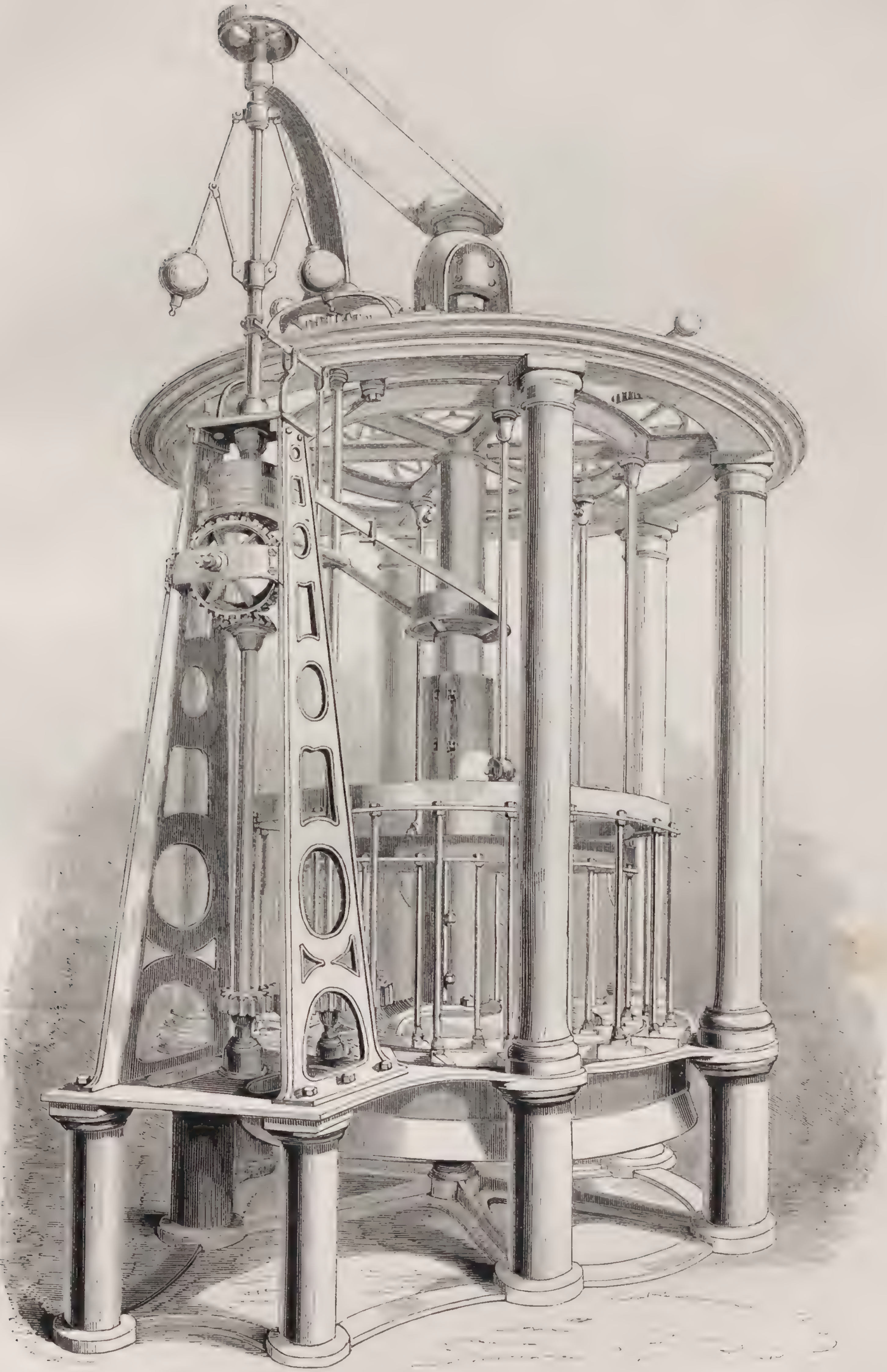
The out-of-water pivot is constructed in such a manner that in case of accident it can be changed in less than five minutes.

The propeller is manufactured of an entire piece, and hence does not require repairing; turbines of this construction have been in use for the last eight or ten years without having cost anything for wear and tear.

The following report is made by M. Arthur Morin, member of the French Institute, in the second volume of his Lessons of Practical Mechanism. After having mentioned experiments made with this propeller, and having examined the results, M. Morin adds,—"Thus the velocity of the wheel may in general vary 0·25 from the one which corresponds with the maximum result, without the efficiency of the result necessary to the absolute work expended by the propeller being diminished more than one-sixteenth to one-twenty-fourth. This qualification is, as every one knows, an immense advantage to manufactories where the nature of the work requires that the propeller should take different velocities."

The arrangement of the working of the valves of this turbine permits the adoption of a regulator of centrifugal power, in all cases where accidental variations of the tide, or resistance, might produce accelerations or stoppages injurious to the working of the machinery.

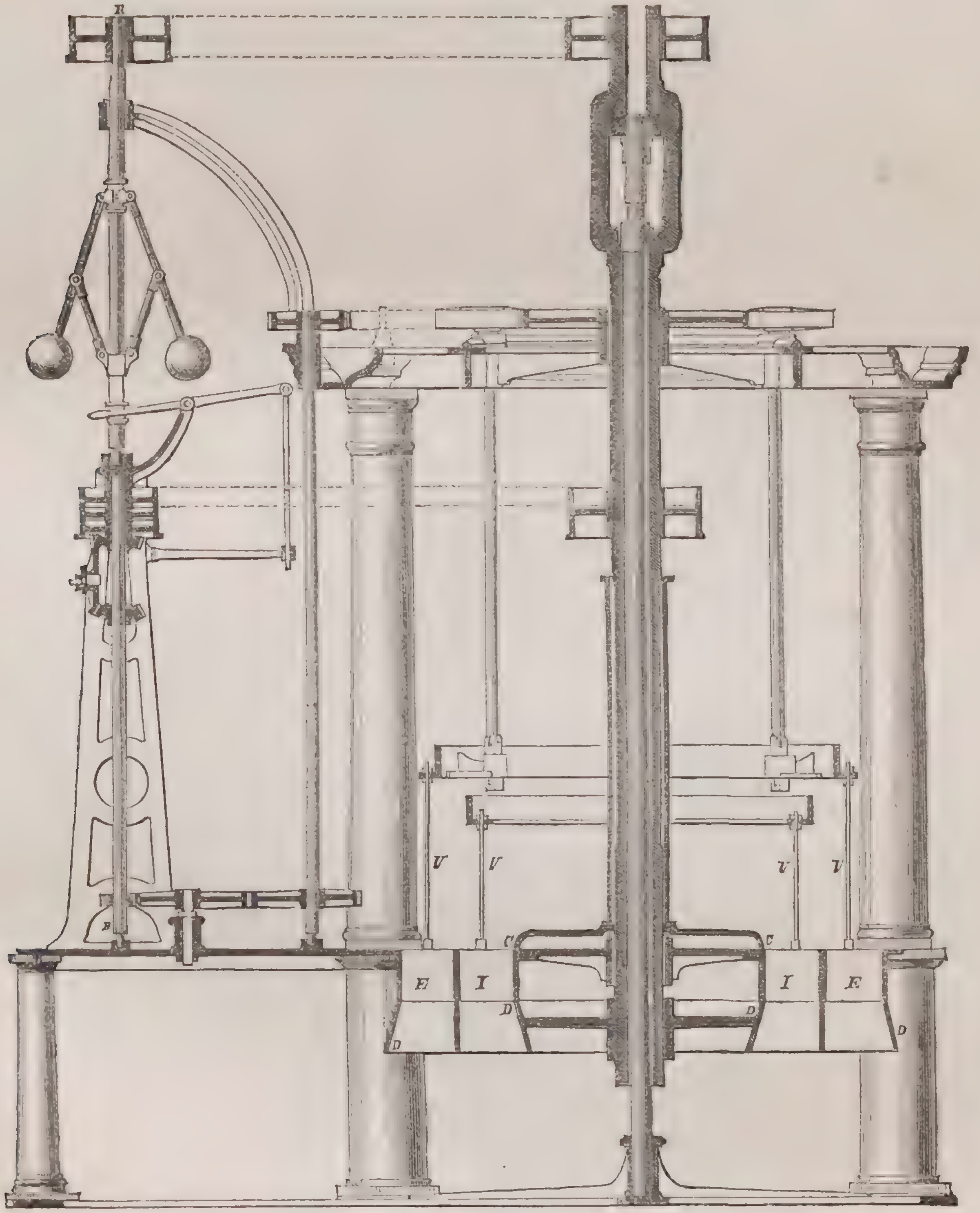
Another feature in the machine is for gearing and putting out of gear the cogs.



212.

A TURBINE (HYDRAULIC PRIME MOVER). M. FROMONT FRANCE.

Fig. 1.



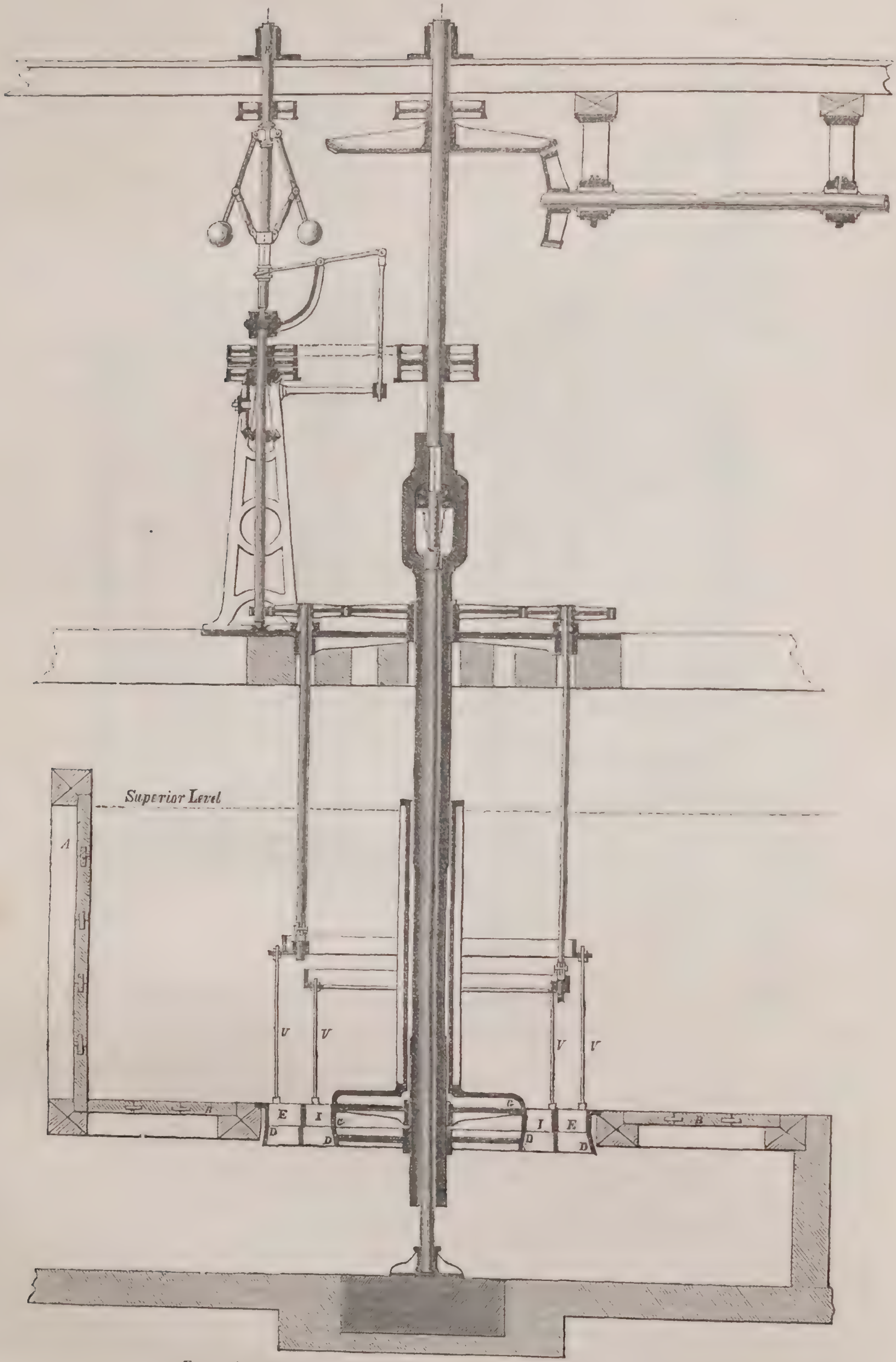
Fromont's Double Turbine.—Sectional Elevation.

Fig. 1.—This figure represents a sectional elevation of the turbine sent to the Exhibition.

Fig. 2.—This illustration is a sectional elevation of a double turbine as applied to the purposes of an ordinary prime-mover, and *in situ;* the letters of reference corresponding in both figures, their equivalents need here be only once given:—

The dotted line represents the upper level of the water retained within the canal formed by the wall A at one extremity, and the floor, or bed, B. To this canal the water of the river is conducted, and it represents in its relation to the turbine the mill-pool of the ordinary water-wheel, being its source of supply. The course of the water in the communication of its movement to the engine is into the chamber of C, from which it escapes through a curved orifice, and strikes against the curved sides of the turbine D, which are arranged in the opposite direction. By this, rotary force is generated, which is communicated through the perpendicular shaft, and thence led off at will. The machines made by the present exhibitors possess a simple arrangement for increasing or diminishing their force and velocity. This is represented by the letters V V, E E, I I, and D D. Of these, the letters E and I represent additional compartments of the turbine D, which may be opened or closed at will by the rods V V, with a corresponding increase or diminution of power. By connecting these rods with a Watt's governor, placed on a perpendicular shaft, called the regulator, R R, a method of regulating the velocity of the engine is at once obtained, the centrifugal force of the balls acting alternately upon the opening or closing of these compartments, and producing, as the result, a constant and balanced movement of the whole machine.

Fig. 2.



Fromont's Double Turbine. Sectional Elevation of a Working Arrangement.

220A **Foucault, Pierre** (Blind), 28 *Rue de Charenton, Aux Quinze Vingts, Paris*—Inventor.

Writing apparatus for the use of the blind, adopted by the Institution of the Young Blind, of Paris.

Two kinds of apparatus, called "cecographs," for writing in black characters and small-hand. Two apparatus for writing in large raised letters. Reproducing machine giving two copies at once; one, the letters of which are black and small, for the use of those who enjoy their sight; the other, reproduced in raised letters on much larger paper, for the convenience of the blind. Also a printing key-board, by which the blind are enabled to write with great rapidity, and without previous instruction.

[The blind person who makes use of the exhibitor's machine is enabled to write without ever having learned to form a letter. It is sufficient for him to know how to read by the touch, to be able to express his thoughts in a legible manner, as it is traced in typographic characters. This curious result is thus obtained—all the letters of the alphabet, raised and of large size, are fixed to the upper extremity of a metallic rod, which slides longitudinally into a groove. These rods are placed in a row of a fan-like form, and each has the same letter at the lower as at the upper part. The letter at the lower part, which is of a small size, is a typographic character. The mechanism is so arranged that all the letters converge to the same point, and when pressed down by the fingers their marks would smear and form only a black spot, were it not that, each time a letter is touched, the paper moves the necessary distance, and clear, straight, and legible writing is produced. The line being terminated, the paper displaces itself perpendicularly, and the operation recommences. Besides these letters, the apparatus places a series of figures and stops at the disposal of the blind writer. The exhibitor makes use of tracing paper, by which he is enabled to produce several copies at once. This machine is very small in size, portable, and possesses great simplicity and rapidity of action.]

221 **Fournival, Altmayer, & Co.**, *Réthel* (*Ardennes*), and at *Solesmes* (*Nord*); 46 *Rue de l'Echiquier, Paris*—Proprietors and Spinners.

Various specimens of dyed merino.
Samples of warp, weft and half-warp worsted.

222 **Gaudchaux-Picard**, —, jun., *Nancy* (*Meurthe*)—Manufacturer.

Fine woollen cloths and fancy articles.

223 **Gesson-Mazille**, —, *Réthel* (*Ardennes*)—Manufacturer.

Pieces of merinos, unbleached and dyed.

224 **Gigot & Boisotau**, *Rheims* (*Marne*)—Manufacturers.

Merino fabrics, unbleached and coloured.

225 **Gaillard**, —, 210 *Rue du Faubourg St. Denis, Paris*—Manufacturer.

Copper, iron, and brass-wire gauze, &c.

226 **Gaillard**, —, jun., *La Ferté-sous-Jouarre* (*Seine and Marne*)—Producer.

Various grinding-stones. Grinding-stones in pieces, manufactured and dressed, with rays. Squares of grinding-stones. The above are fitted for grinding all sorts of grain.

[The millstones obtained from this source are in great repute, not only in France, but also in England and America. La Ferté-sous-Jouarre is situated in the valley of the river Maine, which passes through the town. The millstones are exported in vessels in large quantities from La Villette to Rouen or Havre. The stones, which are silicious conglomerates and full of empty spaces which give them a permanently rough surface, are found in irregular blocks in an alluvial bed, and covered by a stratum of surface soil of variable depth. The stone is slightly coloured by ferruginous matter, and it is stated that occasionally portions of carbonate of lime are found in its substance, it being extremely rare to obtain specimens entirely homogeneous. The discovery of the blocks is a matter of difficulty and uncertainty, and often of fruitless expenditure, and gives employment to a large number of persons.—R. E.]

227 **Gagneau Brothers**, 25 *Rue d'Enghien* (*Paris*)—Inventors and Manufacturers.

Specimens of lamps in porcelain and artificial bronze. Suspension lamps, for dining-rooms and various other purposes.

228 **Galimard, N. A.**, 4 *Rue Honoré Chevalier, Paris*—Producer.

Designs for manufactures:—Epistolographers writing their epistles. St. Apolline. St. Laurent—made on window-glass, for decorating the choir of St. Laurent's Church in Paris.

229 **Gallicher & Co.**, *Bigny and Forge-Neuve* (*Cher*)—Manufacturers.

Specimens of iron (called iron of Berry); used for agricultural implements, edge-tool making, ironmongery, machine making and carriage building.

230 **Gandillot & Co.**, 40 *Rue Bellefond, Paris*—Manufacturers.

Bronze bedsteads, with ornaments of or-molu. Chairs and sofas made of tubular iron. Specimens of the iron tubes employed; and also of gas tubes, and steam-pipes of different dimensions. A double spiral coil of iron tube for a refrigerator, or still. A helical coil of the same tube.

231 **Gerente, A.**, *Quai d'Anjou, Paris*—Manufacturer.

Specimens of stained glass.

232 **Garach, Joseph**, *Roquemingarde* (*Hérault*), *near Montagnac*—Producer.

Written compositions, for educational purposes, leaving blank the tenses of verbs.

233 **Garnaud, Emile François**, jun., *Choisy le Roi*, and 9 *Rue St. Germain des Prés, Paris*—Manufacturer.

Specimens of white terra cotta.

This terra cotta, which has the colour and solidity of fine hard stone, is used with advantage in ornamenting the exterior of buildings. It is not affected by frost, or changes in the weather, and it is especially applicable for use in the restoration of ancient mansions and edifices. It is cheap, firm, and well adapted for works in sculpture.

234 **Gauthier, P.**, jun., 14 *Rue de la Parcheminerie, Paris*—Inventor.

Printing type, with bearing-blocks, vignettes, &c. New invention, patented in France and in foreign countries.

235 **Gavard, Adrien**, 9 *Quai de l'Horloge, Paris*—Manufacturer.

Diagraphs and pantographs, for copying maps, charts, tableaux, and drawings of all descriptions. The diagraph is furnished with magnifying glasses for copying minute objects.

236 **Gide & Baudry**, 5 *Rue des Petits Augustins, Paris*—Booksellers and Stationers.

Specimens of books:—

Monument de Ninive. Exploration Scientifique de l'Algérié. L'Architecture de V. au XVI. siecle. Voyage en Perse. Voyage de Dumont d'Urville au Pole sud, et dans l'Oceanié.

237 **Gilbert, Charles Isidore**, 63 *Rue du Bac, Paris*—Inventor.

Patent painted blinds, waterproof.

238 **Gilbert, L., & Co.**, *Givet (Ardennes)*. (Agents, A. **Chauffourier**, 9 *Sackville Street, London*, and **Mouchicourt Brothers**, 18 *Rue Quincampoix, Paris.*)

Pencils made from a composition by the exhibitors, and graduated by Nos. $\frac{1}{BB}$, $\frac{2}{F}$, $\frac{3}{H}$, $\frac{4}{HH}$, $\frac{5}{HHHH}$, and $\frac{0}{HB}$, are applicable to the purposes of drawing, architectural designing, counting-house and general purposes. The No. 1 supplies the darkest tint, glosses but slightly, adheres firmly to the paper, and produces the finest sketches. All the kinds are soft and firm, and the label on each dozen indicates the use of that particular pencil.

Pencils for drawing on wood represented by—

$$\frac{A}{BH}, \frac{B}{H}, \frac{C}{HHHH}.$$

Coloured chalk pencils, 24 in number, forming three collections of 12, 18, and 24 colours, comprising black, white, blue, bistre, orange, chrome yellow, carmine, yellow ochre, ultramarine, sap green, mineral green, burnt Sienna, Naples yellow, light red, vermillion, raw Sienna, olive green, neutral tint, umber, Veronese green, grey, cobalt, purple, and pink. As these colours may be superposed on each other, every shade may thereby be obtained.

The superiority of the colours from which these pencils are composed is a guarantee of their durability. Instructions for their use, in every description of sketching, is annexed to each collection.

239 **Gratia, —.**—Producer.

Pastel drawings, a new system of the application of pastil.

240 **Godard & Bontemps**, *Cambrai and Valenciennes (Nord)*; *Bapaume (Pas de Calais)*; *Vervins (Aisne)*; *Clermont (Oise)*; 40 *Rue de Cléry, Paris*—Producers.

Specimens of lawn and cambric.

241 **Gouin, A.**, 37 *Rue Louis-le-Grand, Paris*—Painter.

Coloured daguerreotypes, exhibited for novelty and beauty of colouring, and similarity to miniature painting.

242 **Gérimer, —, jun.**, *St. Etienne (Loire)*—Manufacturer.

Specimens of ribbons.

243 **Grandjean, Olympe**, 8 *Cité d'Antin, Paris*—Inventor. (Agent, M. de **Fontaine Moreau**, 4 *South Street, Finsbury.*)

Flowers made of spun glass, by a new process for making artificial flowers, patented in England.

244 **Grandbarbe, —**, 43 *Rue des Marais, St. Martin, Paris*—Producer.

Design for manufacturing carpets.

245 **Graux, Jean Louis**, *Ferm de Hauchamp, Commune de Juvincourt (Aisne)*—Producer.

A fleece of wool, of great fineness and silky character, produced by a peculiar variety of merino sheep.

246 **Gremailly, —, jun.**, *Hotel du Sauvage, Gray (Haut-Saone)*—Manufacturer.

Boxes of preserved food. Boxes of six, twelve, or twenty-four dishes; intended especially for navy officers, sportsmen, and travellers.

247 **Grenet, Louis Franklin**, *Rouen (Seine-Inférieure*—Manufacturer.

Glue. Gelatine (called *grenetine*). Various sorts of gelatine and gelatine articles, such as flowers, ornaments, &c.

248 **Gros, Odier, Roman & Co.**, *Wesserling (Haut-Rhin)*—Manufacturers. Depôts, 15 *Boulevard Poissonnière, Paris;* and **Salomons & Sons**, 42 *Old Change, London.*

Cotton yarn; printing calico; bleached calico; muslin de laine; Scotch cachmere; woollen and cotton cloth; plain barege, figured barege, and poplin.

Specimens of bleached cottons and bleached woollens.

Specimens of roller, perrotine, and block printing, on calico, jaconet, fancy cloth, plain and satin-faced muslin, ornamented and figured muslin, muslin de laine, woollen and cotton fabric, silk and woollen fabric, barege, poplin, &c.

Long and square shawls, in barege, Scotch cachmere, &c. Dresses with flounces, &c.

Cambrics half-ground, plain muslin, printed for Messrs. Faulding, Stratton, and Co., Coventry Street.

Figured muslin, and muslin de laine, designed and printed for Messrs. Debenham, Pooley, and Smith, Wigmore Street. Figured muslin, poplin, and satin-faced barage, designed and printed for Messrs. Swan and Edgar, Piccadilly. Plain, striped, and figured muslin, and plain barege, printed for Messrs. Marshall and Snelgrove, Vere Street. Striped and figured muslin, printed for Messrs. Halling, Pearce, and Stone, Cockspur Street.

Jaconet, and figured muslin, designed and printed for Messrs. Dickens, Stevens, and Dickens, Regent Street.

Figured muslin, barege, and poplin, designed and printed for Messrs. Howell, James, and Co., Waterloo Place.

Figured muslin and barege, designed and printed for Messrs. Lewis and Allenby, Regent Street.

Long and square shawls on plain barege, satin-faced barege, and Scotch cachmere, designed and printed for Messrs. B. Salomons and Sons, Old Change.

249 **Grosselin, A.**, 7 *Rue du Battoir St. André, Paris*—Producer.

Celestial globe. Georamas and uranoramas, used as lamp-shades. New sphere on the Copernican system. Terrestrial globe, with spherical canopy, to represent the alternations of day and night.

250 **Guesnu, —**, 70 *Rue du Temple, Paris*—Producer.

Fancy papers. Embossed covers. Specimens of gold, silver, and coloured printing.

251 **Guillemot Brothers**, *Meulan (Seine and Oise)*—Manufacturers. Depôt, 88 *Rue Neuve des Mathurins, Paris.*

Specimens of coach and livery lace.

252 **Guinier, Thomas**, 25 *Rue de Grenelle St. Honoré, Paris*—Manufacturer.

Specimens of cocks, requiring no adjustment, with a flexible stopper in leather or vulcanized India-rubber.

They are peculiarly applicable to under-pressure (the passage of the water contributing to their stoppage); to boundary fountains, water-closets, and the distribution of waters. They are said to last longer than the old system of cocks, and are easily repaired.

253 Guyotin-Lorsignol, —, *Rheims*, 15 & 99 *Rue du Bourg*, *St. Denis* (*Marne*)—Manufacturer.

Specimens of blankets, from the coarsest to the finest quality.

254 Guynet & Becquet, 33 *Rue du Sentier, Paris; at Valenciennes, Cambrai and Nancy*—Manufacturers. (Agents in London, Graetzer & Hermann, 3 *Huggin Lane, Wood Street, Cheapside.*)

Printed and embroidered white cambric handkerchiefs.

255 Hadrot, G., jun., 39 *Faubourg St. Martin, Paris*, and 289 *Regent Street, London*—Inventor and Manufacturer.

Patent moderator lamp, an improvement on the carcel lamp. Exhibited for simplicity and cheapness.

256 Hartmann & Sons, *Munster* (*Haut-Rhin*)—Manufacturers. Depôts at *Lyons* and 32 *Rue du Sentier, Paris.*

Spun cottons; white calicoes; cambric muslins; jaconet muslins; and printed woollen and cotton fabrics. New designs by the exhibitors.

These goods were spun, woven, and printed in the establishment of the exhibitors.

257 Hartmann & Co., *Malmerspach* (*Haut-Rhin*)—Manufacturers.

Various specimens of combing by machinery, and spinning of combed wool.

Specimens of fine raw wool, combed by machinery, and made into yarn for the manufacture of shawls and other articles.

258 Hayot, Jules Joseph, *Caen* (*Calvados*)—Coachmaker.

Four-wheeled carriage, with moveable seat Patented. Constructed so as to be divisible into two separate parts, and form a pair of two-wheeled tilburys.

Patent four-wheeled carriage, with moveable axle. The novelty and advantage of this invention consists in its forming a four-wheeled covered or uncovered carriage, or by being divided, forming two tilburys. The economy and utility of this carriage is that it gives to the purchaser the advantage of three carriages, in which he can ride in the society of several persons, or else alone. In case of accident the fore or hind part can be immediately detached and formed into a tilbury.

259 Heiligenthal & Co., *Strasbourg* (*Bas-Rhin*)—Producers.

Specimens of ornaments in stone-mastic, for decorating the inside or outside of buildings.

These ornaments and mouldings are manufactured by means of metal moulds; the paste, or mastic in a soft state, is pressed into these moulds by extremely heavy weights, similar to those used at the Mint, and by these means it acquires that durability and polish which is necessary for the gilding process. These ornaments are employed principally for interior decorations, but by being covered with a coat of copal varnish they may be employed likewise for exterior decoration. A specimen may be seen which has stood every kind of weather during twenty-five years.

260 Helbronner, Gustave, 129 *Rue Montmartre, Paris*—Producer.

Specimens of needlework, and canvas for ornamental work.

261 Henoe, —, 1 *Rue St. Sauveur, Paris*—Producer.

Screens and feather-brooms, of various colours, made of ostrich, peacock, cocks of France, and other birds' feathers. Made for exportation.

262 Henri, Joseph, 21 *Passage Delorme*, and 12 *Rue de Rivoli, Paris*—Manufacturer.

Ortho-strabic glasses for persons affected with squinting. Sight-preservers for ophthalmia and weak sights.

263 Hess, Gustave, 6 *Rue de la Villiere, Paris*—Manufacturer. (Agent, 1 Bread Street, London.)

Figured fabrics (cotton or fancy warp, weft with pure combed wool), in various styles, but particularly for waistcoats.

264 Hoen, Jean Bernard, *Nimes* (*Gard*)—Inventor.

Patent system of windows, blinds, and shutters, simple, and without machinery, springs, or gear.

265 Hostin, —, *Etel* (*Morbihan*)—Producer.

Specimens of flowers, leaves, and baskets made of shells.

266 Huard Brothers, *Versailles* (*Seine and Oise*)—Manufacturers.

Nautical chronometer-works of various sorts.

267 Delaroche-Daigremont, —, 17 *Rue de la Paix, Paris*—Manufacturer. (Depôt, 8 *Maddox Street, Hanover Square, London.*)

Embroidery, net, lace, wedding dresses, baby's dresses, and trimmings.

268 Hubert, Madame Josephine, *Mondeville near Caen; 2 Rue du Grand Chantier, Paris*—Inventor and Proprietor.

A guipure quilt, in relief; a trimming for dress in guipure, also in relief; flounces, wreaths, and bouquets of flowers and leaves; lace in relief. These are designed as a new ornament for dress, furniture, and fancy articles.

The novelty of this invention, which has been patented in France and Belgium, consists, first, in the application of lace of different points to the exact representation of flowers, leaves, and fruit, after nature, and of various other objects; and in the strength and solidity given to these ornaments composed of the lightest fabrics. Secondly, in guipure in relief, demi-relief, or simply raised and obtained by the same process. These may be used either separately, or set with artificial foliage, precious stones, or any other ornaments. They can also be adapted to press-point, net-work, stuffs, and fabrics of any kind as ground work.

These flowers and guipure in relief have the advantage of being very easily cleaned without in the least losing their shape. They can also, when taken to pieces, be transformed in various ways, and made to completely change their shape, so as to form a great variety of ornaments for dress.

269 Hue, Jn. Baptiste, 76 *Faubourg St. Martin, Paris*—Inventor and Manufacturer.

Specimens of locks which cannot be picked or opened by false keys; exhibited for security and cheapness. Patent machine for cutting and bending at the same time hooks and eyes, made and invented by the exhibitor. Specimens of hooks and eyes cut by the machine.

270 Huet, Mme. A., *Rouen*, and 12 & 14 *Rue du Cimetière, St. Nicolas, Paris*—Manufacturer.

Specimens of India-rubber articles, braces, buckles, brace-ends, fancy braces, thread and cotton twists.

271 Jacobber, —, 43 *Rue du Faubourg, St. Denis, Paris*—Artist.

Twelve painted plates in porcelain of Sèvres, with varied patterns of flowers, fruits, and birds, on a blue ground. The exhibitor was the designer of the two large square porcelain pictures of flowers and fruits, exhibited by the Sèvres National Manufactory.

272 Jacquemart Brothers, *Charleville* (*Ardenne*)—Manufacturers.

A variety of carbines and blunderbusses.

Cremons (a new shutting piece for windows), bolts, and thumb-bits, mostly patented, and presenting the novelty of the union of cast-iron with forged iron.

Various fire-shovels, tongs, and pokers.

Improved locks, which can be adapted to any door without the aid of a locksmith.

273 **Jaillon, Moinier, & Co.**, *La Villette, near Paris* (*Seine*)—Inventors and Manufacturers.

Stearine candles. Stearic acid. Soaps. These candles are extremely white, transparent, and durable. By this process the manufacturer is able to mix, in the preparation of soap, greasy ingredients of a very inferior quality, and yet produce soaps of the best quality. The soaps are more transparent, and at the same time harder and more adhesive, and free from odour.

274 **Japuis & Son**, *Claye, near Paris*—Manufacturers.

Printed calicoes. Printed articles for furniture; and printed muslins for dresses.

275 **Japy Brothers**, *Beaucourt* (*Haut-Rhin*), and 108 *Rue du Temple, Paris*—Manufacturers.

Specimens of horology, consisting of movements for clocks and watches. Hardware, wooden screws, locks, and household utensils in wrought iron.

276 **Jolly, Felix**, *Mer* (*Loire and Cher*)—Manufacturer.

Purified extra fine oil for watchmakers, fine machinery, and fire-arms.

277 **Joly, —**, *Esternay* (*Marne*), and 24 *Rue du Faubourg St Denis, Paris*—Manufacturer.

Two large porcelain vases, each of a single piece, ornamented in gold and paintings, with a coloured bouquet of flowers.

278 **Juhel-Desmares, Jules**, *Vire* (*Calvados*)—Manufacturer.

Cloth of various fabrics and colours: Twilled beaver, double-milled and plain cloth, satined.

279 **Julien, Marguérite**, *au Puy* (*Haute-Loire*)—Lacemaker.

Blondes. Lace. Velvet-silk. Alençon silk. Florence shawl, collars, lappets, and veils.

280 **Keller, F. A. E.**, 40 *Rue du Bac, Paris*—Hydrographic Engineer.

Double planisphere for great circle sailing, and facilitating the practice and tuition of nautical science. New invention.

281 **Kirstein, Frederic**, *Strasbourg* (*Bas-Rhin*)—Producer.

Silver alto-relievos, executed with the punch chisel, representing groups of animals and hunting parties.

282 **Knecht, Emile**, 45 *Rue de Babylone, Paris*—Wood-carver.

Large basin, carved in pear-tree wood, of a single piece, representing a female in a niche, surrounded by leaves and birds.

Large oval frame, with representation of wreaths of flowers and ribbon knots carved in oak, gilt by Picarel.

283 **Lacroix & Son**, *Rouen* (*Seine-Inférieure*), and 23 & 27 *Boulevard St. Hilaire*—Manufacturers.

Patent fulling machine, for cloths and other woollen fabrics, by continued pressure. More than 4,000 of these machines are now in full operation in France, England, Germany, and Spain.

Patent lithographic machine, by which upwards of 5,000 copies can be taken without injuring the composition.

284 **Lafaye, Prosper**, 9 *Rue de l'Empereur* (*Barriere Blanche*), *Paris*—Producer.

Painted window-glass. The upper part is in imitation of the mosaic paintings of the 12th and 13th centuries. In the centre are scriptural subjects after the style of the 16th century. This specimen is represented in the accompanying Plate, 96.

285 **Lahure, —**, *Havre* (*Seine-Inférieure*)—Inventor.

Model of a boat that immediately empties itself and which cannot be capsized.

286 **Lainé, Laroche, & Max, Richard**, *Angers* (*Maine and Loire*)—Manufacturers.

Raw Angers hemp; combed hemp for power looms; hemp yarns for the warp and weft of canvass, and for shoemakers' threads; and sail canvass made of hemp, without sizing, used in the French navy.

287 **Laneuville, Victor**, 17 *Rue St. Croix de la Bretonnerie, Paris*—Manufacturer.

Patent machines for making seamless silk purses and watch-guards. These machines manufacture four dozen per day.

288 **Lang, Louis**, *Schelestadt* (*Bas-Rhin*).

Various specimens of wire gauze, for manufactories of paper by machinery. These specimens are adapted for different descriptions of paper.

289 **Langlois & Leclercq**, 81 *Rue de la Harpe, Paris*—Booksellers.

Various scientific and literary works, illustrated, viz.:—Pomologie Française; Leçons Elementaire de Botanique; Le Plutarque Française; Traité Elementaire de Topographie; Cours Elementaire de Mecanique, de Chimie, d'Arboriculture et Agriculture; Exploration Scientifique de l'Algerie, Histoire Naturelle des Mollusques; Recherches de Physique sur la Méditerrané; Observations sur le Magnetisme Terrestre, &c.

290 **Slate Society of Angers**, *Angers* (*Maine and Loire*)—Producer. (**Charles Lariviére**, *Angers*, Manager.)

Specimens of slate from the exhibitors' quarries, near Angers, exhibited for quality and purity. The Society possesses eight quarries, which are worked by 3,300 workmen, employs 23 engines of 260 horse-power, and manufactures 130,000,000 slates yearly.

[A large quantity of good slate is obtained from near Angers, the quarries giving employment to several thousands of workmen, and the supply being estimated at eighty millions of slates annually for roofing only. The quality is excellent and the dimensions large. The slate corresponds with that found in Cornwall.—D. T. A.]

291 **Laroche, Edward**, 10 *Rue des Jeûneurs, Paris.*

Designs, for printing on various fabrics, such as barege, de laines, silk, &c.

Various designs for laces, guipure, &c.

292 **Laumain, Claude**, 15 *Rue de la Tixeranderie, Paris*—Watchmaker.

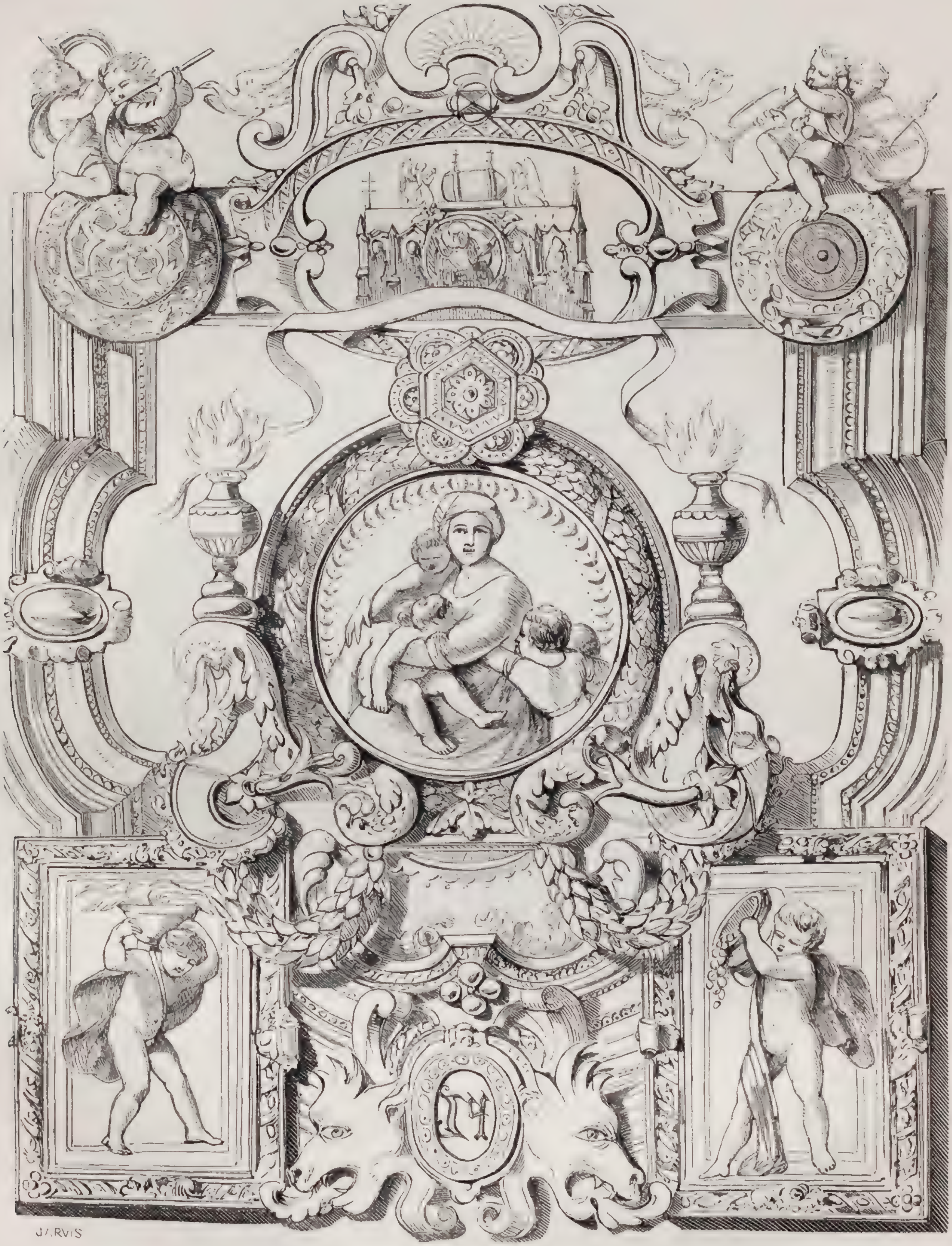
Pocket chronometers of improved construction, rendering them less liable to injury from accident.

293 **Laureau, Leonard**, 12 *Rue St. Gilles* (*au Marais*), *Paris*—Producer.

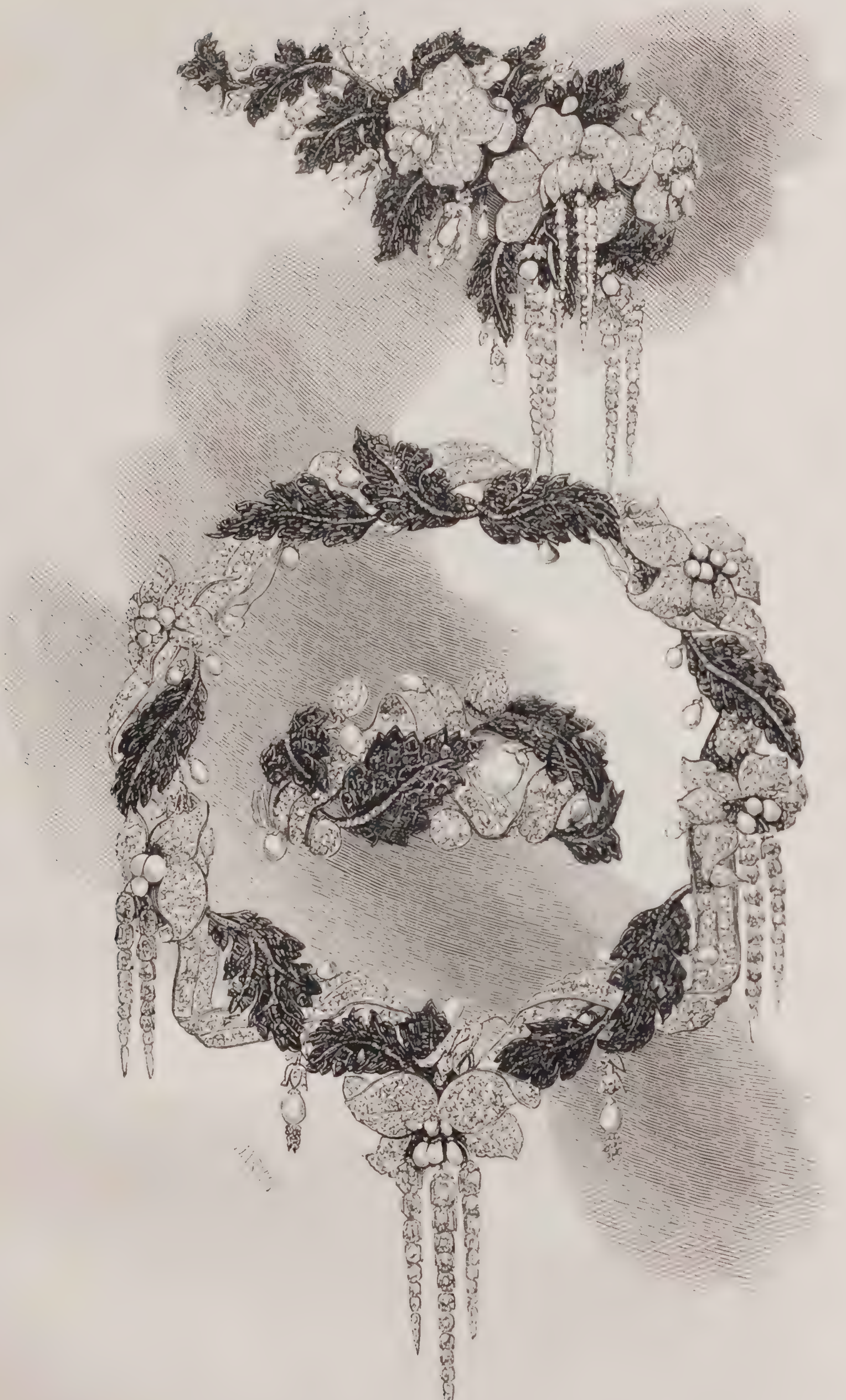
Five figures made of a galvanized compound metal of bronze and pewter, representing the Republic, Europe, Asia, Africa, and America.

294 **Laurent, Gsell, & Co.**, 43 *Rue St. Sebastien, Paris*—Glass-painters.

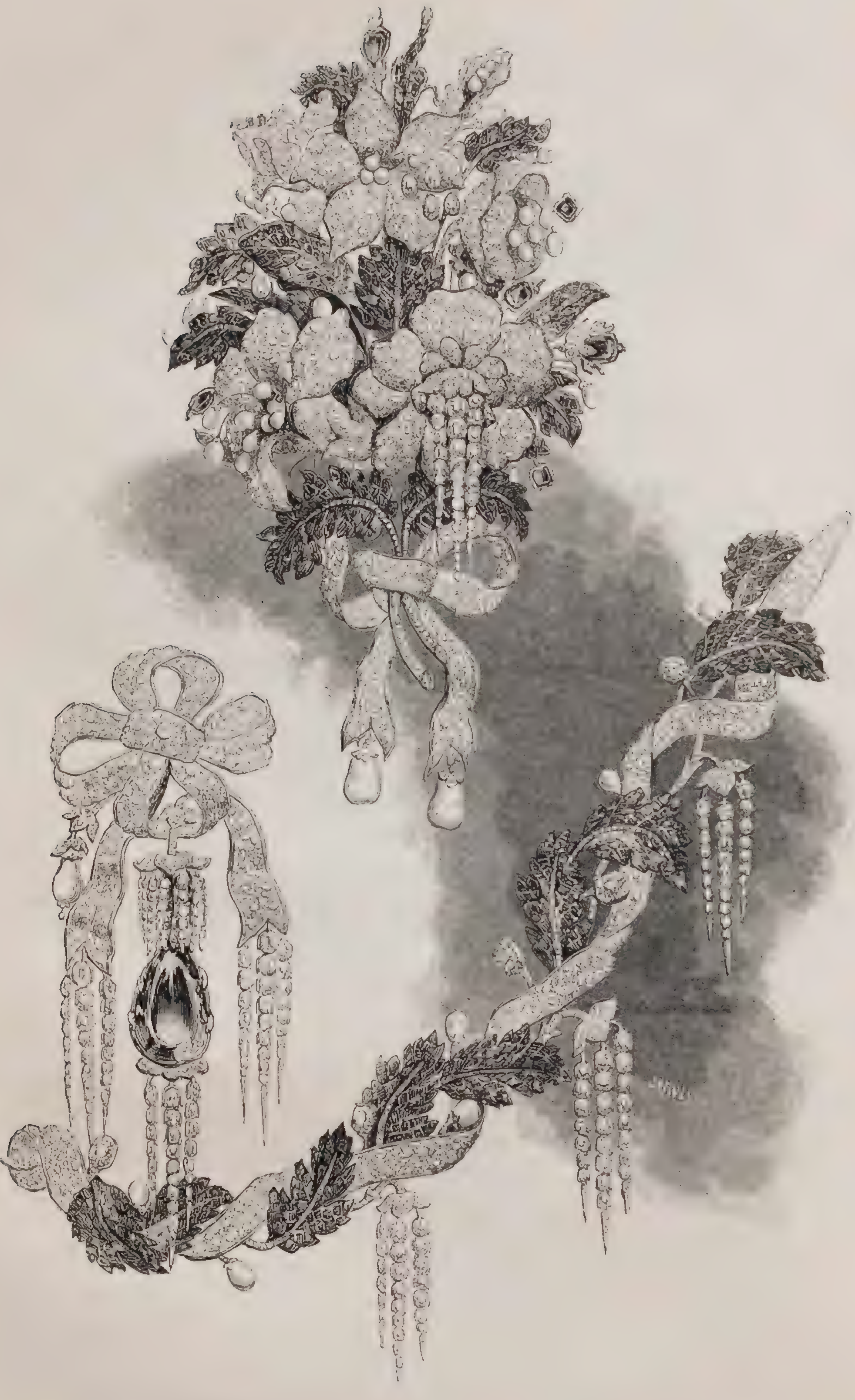
Two armorial bearings, Swiss style, of the 17th century, in coloured glass.



96. STAINED GLASS WINDOW. M. P. LEFAYE.



207. TIARA AND BROOCHES OF BRILLIANTS AND PEARLS.
THE PROPERTY OF HER MAJESTY THE QUEEN OF SPAIN.



125. BOUQUET OF BRILLIANTS AND OTHER JEWELS BELONGING TO HER MAJESTY THE QUEEN OF SPAIN.

Two painted glass windows, representing the interior of Chinese houses.

A panel in the style of the 16th century, a restoration of the celebrated windows of Ferrières.

Ornamented squares of glass, with medallions, for house decoration.

295 **Lautz, Louis**, 40 *Rue Montmorency, Paris*—Ivory-carver.

Carved ivory vase, representing the battle of the Franks against the Saxons, gained by Charlemagne.

This vase is represented in the accompanying Plate 250.

296 **Laydet, Son, & Co.**, *Niort* (*Deux Sèvres*), and 37 *Rue Grenelle, St. Honoré, Paris.* (Agents, MM. **Graetzer & Hermann**, 3 *Huggin Lane, Wood Street, London.*)

Chamois leather; buckskin gloves; beaver and chamois gloves.

297 **Leblanc & Miller**, *Mouroux* (*Seine and Marne*)—Manufacturers.

Samples of wheat-flour, of the first quality, for making bread; the produce of the district of Coulommiers.

298 **Lebrun, Alexandre**, 3 *Rue Chapon, Paris*—Manufacturer. (Agent, Mr. **Salomon**, 22 *Red Lion Square, London.*)

Spectacles, telescopes, and optical-glasses.

299 **Leclerc, Henri**, 105 *Quai Valmy, Paris*—Engine-worker.

An ornamental fountain with a basin in zinc, and figures in cast-iron, painted in imitation of bronze.

A collection of jets d'eau of different forms.

Rotary and other pumps adapted for horticultural purposes.

300 **Lecoentre**, —, Marine Officer, 52 *Rue St. Georges, Paris.*

An improved sounding-lead—nautical apparatus for soundings—adopted by the French navy.

This instrument indicates the nautical depth to which it descends without the necessity of taking in sail, provided the rate of the ship does not exceed six or seven knots.

The exhibitor purposes presenting his invention to the English Admiralty after the Exhibition.

301 **Lefrançois**, —, 302 *Rue St. Denis*, and 7 *Passage Basfour, Paris*—Manufacturer.

Sliding boxes for lucifer matches; taper-stand boxes for lucifer matches and tinder, of various descriptions, patented.

302 **Lehuby**, —, 78 *Rue St. Lazare, Paris*—Chemist.

Medicinal envelopes, or lichen capsules (patented in France and England), for the purpose of containing medicines, and concealing their disagreeable flavour.

These capsules, although extremely thin and transparent, are not permeable. The mucilaginous vegetable substance of which they are composed is soluble only in water, so that the generality of medicines prescribed in small doses may be taken in them.

303 **Lemolt, Alexandre Edward**, 42 *Passage Jouffroy, Paris*—Inventor.

Galvanic battery, constructed in the workshops of M. Loyseau, optician, Quai de l'Horloge, Paris. Patented in France and England.

[Thirty pairs of plates, in this form of battery, are stated to be equal to the requirements of five great electric telegraphic lines in France. The extent of line thus served appears to be about fifteen hundred miles. The pile is of very simple construction, and may be readily worked by otherwise ignorant persons. It is said to develop electricity of great intensity, and to be constant in its effects. In addition to its applicability to the purposes of the electric telegraph, it is also adapted to the electrotype, and as a source of active electricity for various purposes. The principal peculiarity of the battery, which is a modified form of Bunsen's, appears to consist in producing a constant deposition of copper upon the upper surface of the charcoal or coke cylinder, by which the metallic contact of the metal and the cylinder is preserved. —R. E.]

Chóca, a compound of cocoa and coffee. Chóca is a genuine mixture, in various proportions of cocoa and coffee, the ingredients of which being ground, and made into a paste like chocolate, present a combination partaking of the blended taste and aroma of both these aliments.

The admixture of coffee renders chocolate easier of digestion, while the exciting properties of coffee, are in turn tempered by the addition of chocolate.

304 **Lemonnier**, —, 6 *Place Vendôme, Paris*—Jeweller.

Set of emeralds belonging to Her Majesty the Queen of Spain.

Various other articles of jewellery. These are represented in the accompanying Plates, 105 and 207.

305 **Léon**, —, 7 *Rue de Crussol, near the Coulerard du Temple, Paris*—Chemist.

Varnishes for leather, parchment paper, carvings in wood, instruments in horn, bone, and tortoiseshell, moulds in plaster and wax, tape measures, lamp shades, maps, toys, artificial flowers, metallic capsules, &c.

306 **León, Clément, & Bourgeois**, *Morez* (*Jura*)—Manufacturers.

Turnspit with weight, winder, and bell to give notice five minutes before the weight is quite down. This article can turn about 88 lbs.

Patent turnspit, with spring and bell, and perpetual winding key. This key has the advantage, that no injury arises from continuing the winding after the spring is wound up, the key turning on itself by a patent mechanism. It can turn about 33 lbs.

An eight-day clock, striking and repeating the hours and quarters, with lever escapement, jewels in six holes and alarum. Frame with gilt engraved brass columns.

An eight-day travelling clock, striking and repeating the hours and quarters. Arnold escapement, jewels in six holes, alarum and calendar, in plain gilt brass frame.

Regulating time-piece, going a month, with dead seconds, stop escapement, pendulum compensation, with enamel dial and copper circle, in a varnished deal case.

An eight-day clock, with a circle of wrought copper, Graham's escapement and dead seconds; its weights plated with polished brass, striking the hours and half hours, repeater, alarum, and balance pendulum.

An eight-day clock, striking the hours and quarters, with alarum, enamel dial, and copper circle, polished copper pendulum, and brass weights.

An eight-day clock, polished brass works, lever escapement and seconds hands, striking the hours and half-hours, and repeating, seven branches balance, enamel dial, and weights in polished brass.

307 **Leperdriel**, —, 28 *Rue des Martyrs, Paris*—Chemist and Druggist.

Pharmaceutical caoutchouc for dressing blisters, issues, &c.

Elastic stockings, made of caoutchouc, for varicose veins and affections of the extremities.

308 **Leroux**, —, *Vitry le Français* (*Marne*)—Producer.

Bark of the willow-tree; Salicine.

Chemical productions capable of being employed as a febrifuge.

309 Leroux, —, *Cancale* (*Ille and Vilaine*)—Clock-maker,

Clock, with a new system of striking mechanism, by which the striking of the hours and the quarters may be repeated at pleasure.

310 Lapierre & Son, *Vallerangue* (*Gard*)—Manufacturers.

Samples of raw and spun silk.

311 Lespinasse —, 34 *Quai de Billy, Paris*—Inventor.

Model of an improved oven for bread-baking. Patented.

312 Lethuillier-Pinel, —, *Sotteville lez Rouen* (*Seine-Inférieure*)—Inventor.

New safety apparatus for steam-boilers and locomotive engines (patented).
Steam-whistle, gauges, steam-gauges, &c.

313 Leunenschloss, Math., *Manufactory, Rouen* (*Seine-Inférieure*); depôt, *Rue de la Fidélité, Paris*)—Manufacturer.

Braces and trimmings for tailors, &c.
Trimmings for ladies' dresses.

314 Desplanques, Lorthiois, *Tourcoing* (*Nord*)—Manufacturer.

Samples of worsted yarn, for weaving fabrics of different qualities.

[Worsted yarn was formerly only used in the manufacture of cloth, but recently the finer qualities have been used in the manufacture of stuffs for ladies' dresses, and the inferior qualities for flannels and common dresses, &c.]

315 Louis, Blais, jun., Letellier, & Co., *Hâvre* (*Seine-Inférieure*)—Manufacturers.

Various ropes for the navy (patented), including ships' stays, bolt ropes, cabling, rigging, &c.
Specimens of yarn, made by machinery.

316 Louit Brothers & Co., *Bordeaux* (*Gironde*)—Manufacturers.

Samples of chocolate and mustard, manufactured by steam.

317 Maire & Co., *Strasbourg* (*Bas-Rhin*)—Manufacturing Chemists.

Specimens of acetate of lead, soda, lime, and copper; acetic acid; white lead; purified alcohol, and vinegar. Patented.

318 Maître, Antoine, *Dijon Côte d'Or*—Bookseller and Bookbinder.

Specimens of bookbinding.
Pocket-books for various purposes.
Albums and scrap-books.

319 Malapert, —, *Poitiers* (*Vienne*)—Chemist.

Sulphate of magnesia and sulphate of soda, obtained by new manufacturing processes.

320 Mâle-Dickson & Co., *Coudekerque Branche, near Dunkerque* (*Nord*)—Manufacturers.

Flax sail-cloth for merchant and navy vessels.

321 Mame & Co., *Tours*—Printers, Binders, and Booksellers.

Specimens of various illustrated works, exhibited for printing, binding, illustration, &c., viz.,—"St. Louis et Siecle," "Charles VI.," "Voyage en France," "Don Quichotte," "Buffon," "La Guerre des Roses," "Silvio Pelico," "Revolution Français," "Charles V.," "Histoire de Chevalerie," &c.

322 Malingié, —, Proprietor and Manager of the Agricultural School of La Charmoise, *Pont Levoy* (*Loir and Cher*).

Samples of combed wool, the produce of a breed of sheep reared at La Charmoise.

323 Martin, William, *St. Pierre les Calais* (*Pas de Calais*)—Engine-maker.

Jacquard machine for bobbin-net lace frames and weaving-looms. Patented in France and England.

This is an improvement on the old "Jacquard," having in view the saving of wear in the machine itself, and the reduction of cost in preparing the perforated medium by which the figures are produced on the fabric. The first improvement consists in the substitution of a simple "lever movement" for the old spring driving action, which allows of the introduction of the second improvement, namely, the new medium—thin paper instead of card-board—as the action of the improved machine is so light that the paper is equally if not more durable than the old cards, while the cost is reduced about 99 per cent., and the band or material is reduced to one fourth of the usual length of the cards: besides which, there is attached to this patent a machine for producing the bands from a perforated design, by which they can be stamped at the rate of 3,000 cards per hour.

324 Montgolfier, —, *Annonay* (*Ardèche*); and 18 *Rue de Seine, St. Germain, Paris*—Manufacturer.

Various descriptions of paper: for drawing, letters, registers, printing, engraving, &c. A large assortment of superfine coloured paste-boards; white card-board, and coloured card-boards of different tints; paper made of vegetable fibre for crayons, and of natural vegetable pulps; animal parchment, composed of purely animal ingredients; incombustible paper, for cartridges, winders; for the use of gold, silver, and copper beaters; for bank notes, &c. Patent granted in 1850 for cartridges, manufactured under the immediate direction of the inventor, without the use of any percussion paste.

325 Moreau, Urbain, & Co., *Montrouge*, and 3 *Rue Drouot* (*Grange Batelière*)—Manufacturers.

Lamp-oils, which give a brighter light than gas, and do not explode. Essence for varnish, which dissolves caoutchouc and copal in three days. Oil for machinery, which both lubricate and preserve the metals. Grease for railway purposes, waggons, &c.: this grease was tried on the South Eastern Railway, and was found superior to palm oil, and cheaper than other grease.

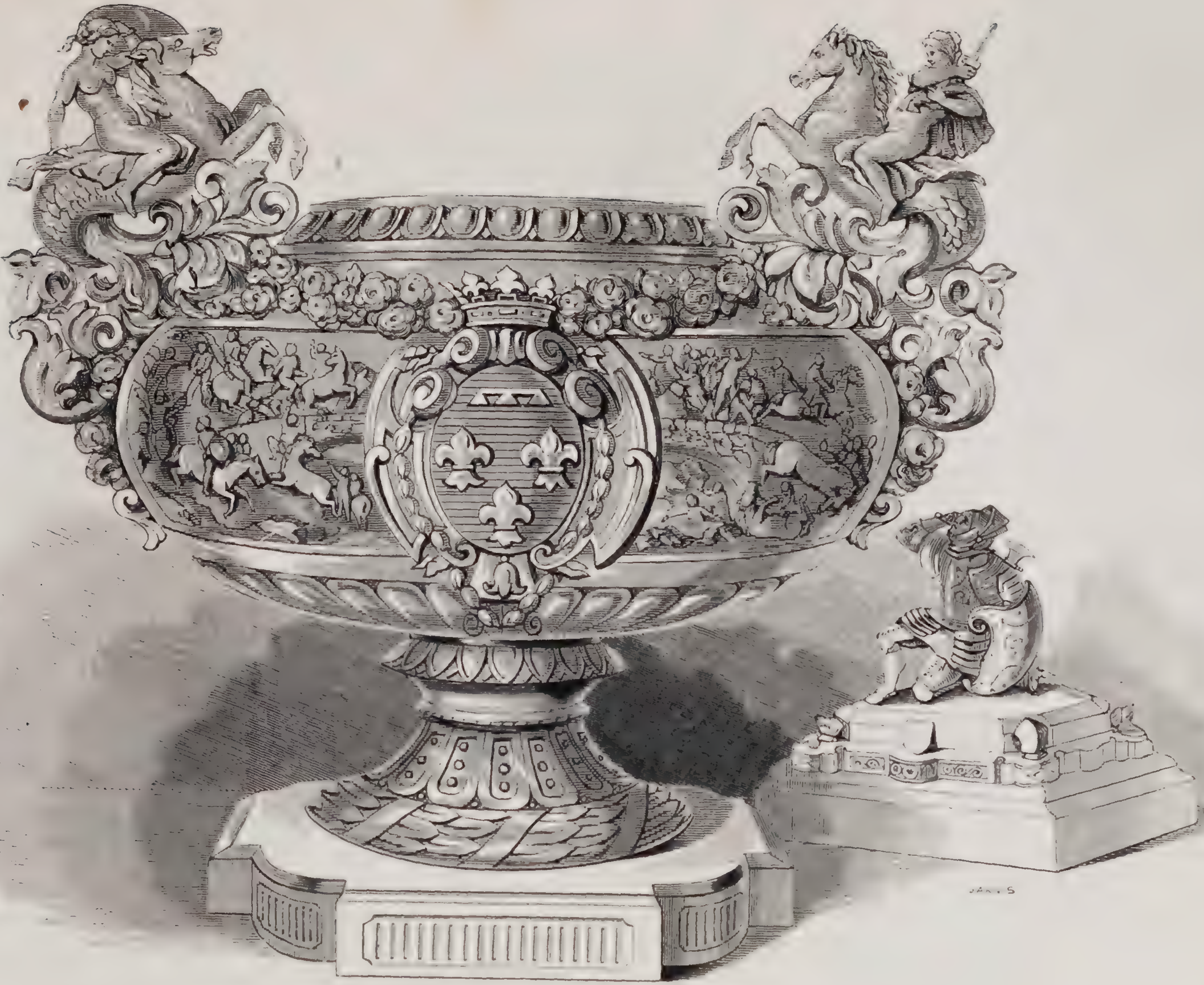
Soaps and pastes for the toilet. The production of the bituminous mines of Schabwiller (*Bas-Rhin*), belonging to the exhibitors, and manufactured by patent process in the workshops at Montrouge.

326 Moreau, Felix, 88 *Rue de la Glacière, Paris*—Inventor and Patentee. (Agent, Frenais de Coutard, 54 *Quai de Cilly, Paris.*)

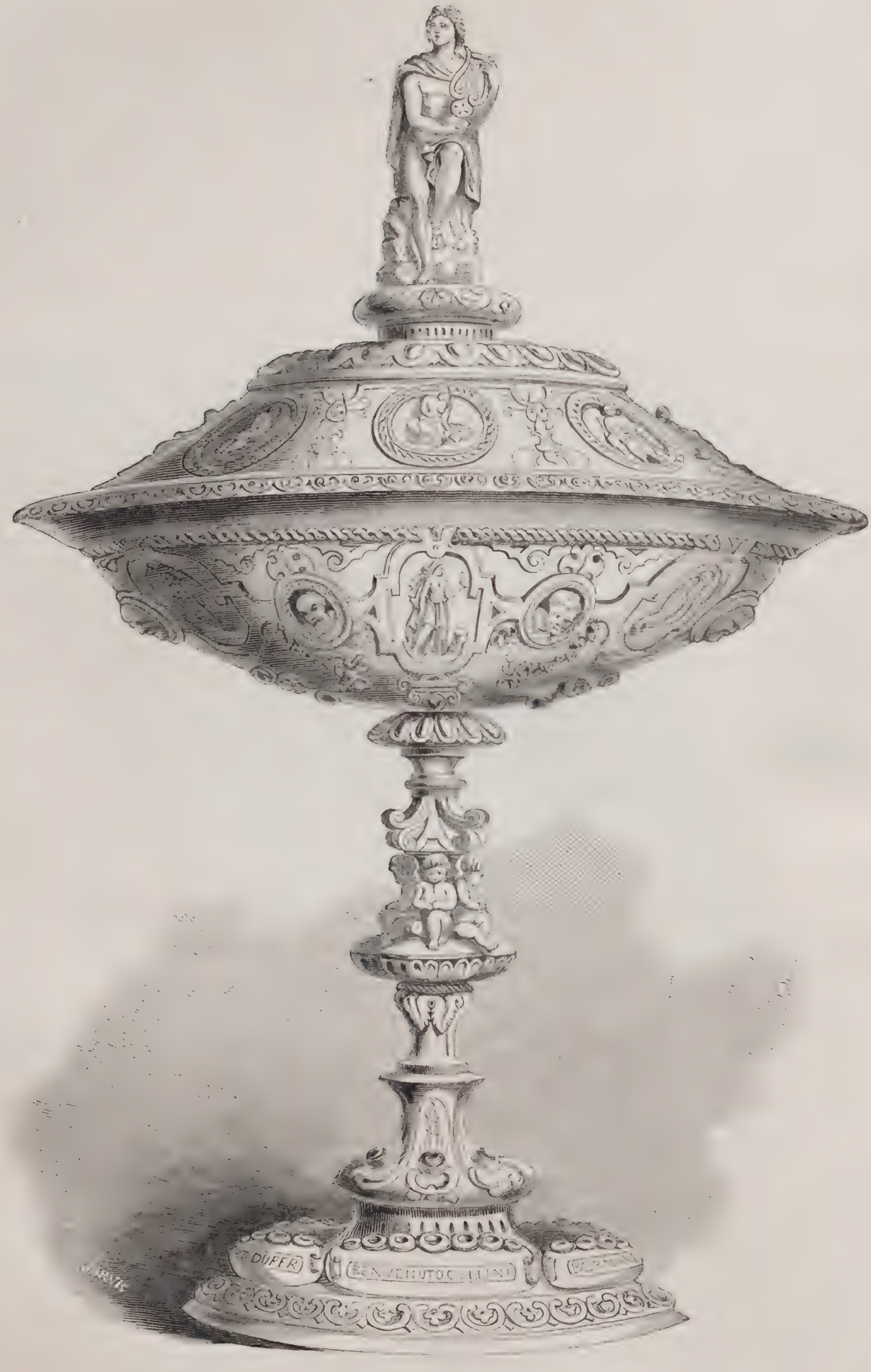
Specimen of new coal made by patent process, from vegetable and herbaceous matter, fossils, &c., burning without smoke or smell. It lasts longer, and gives greater heat than charcoal.

The process of manufacture is simple; the principal matter of which it is made, is combustible, and augments the weight and value of the product. The substances mentioned are mixed with a third of their volume of coal in powder; the mixture is placed in conical metal tubes and reduced in a heated oven. In an hour, solid pieces are produced by the fusion of the coal between the interstices of the mixture and by compression. The inflamed gas maintains the warmth of the oven at a temperature sufficient to carry on the operation.

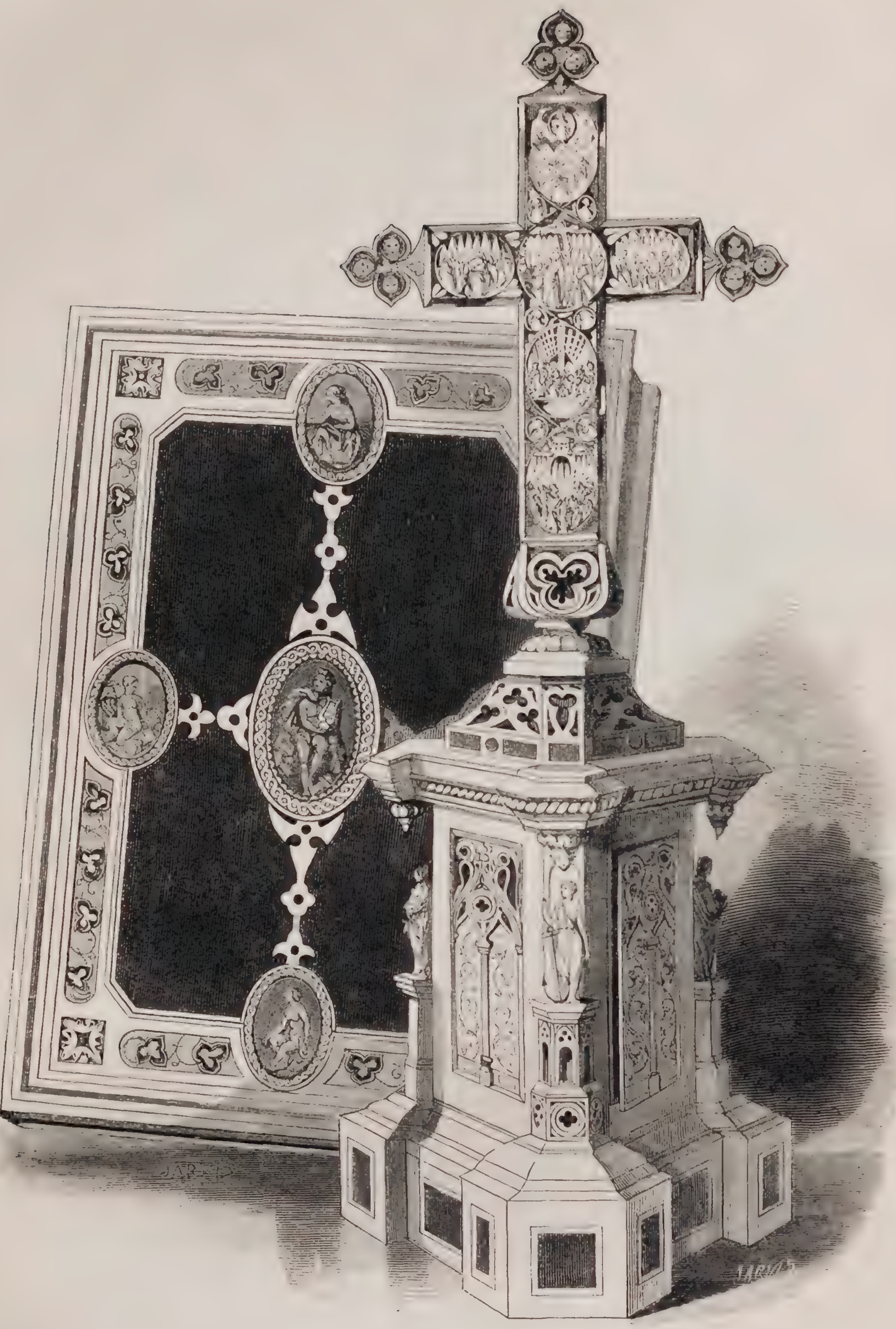
The heating and warming property of this coal is increased by immersing the combustible matter, as it comes from the oven, in a solution of caustic potash. The sulphurous action of the product is destroyed by adding neutral metallic salts, where turf is the matter employed.



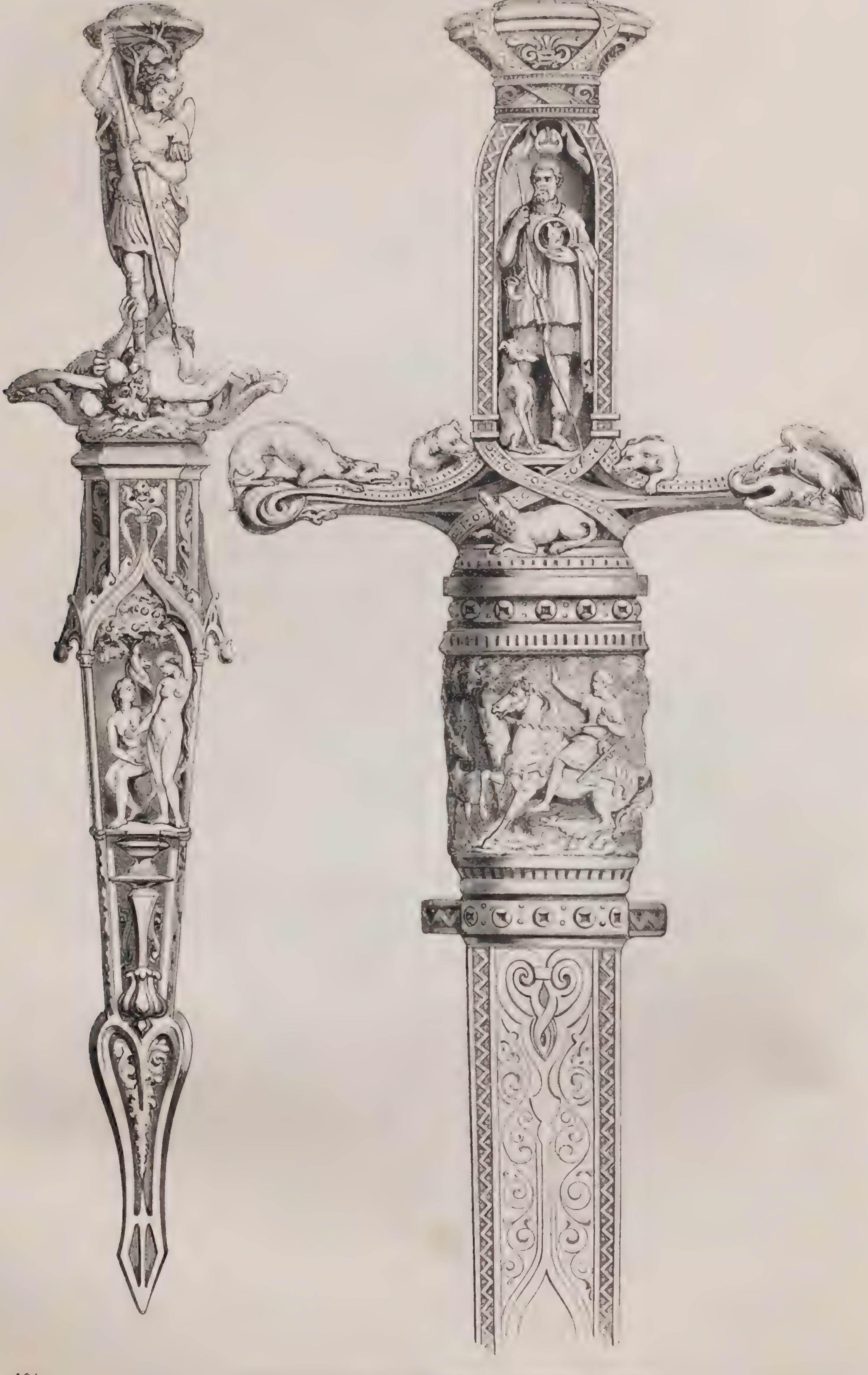
VASE, IN OXIDIZED SILVER. M. MARRELL. FRANCE.



253. CELLINI CUP. M. M. MARREL. FRANCE.



253. SPECIMEN OF ORNAMENTAL BINDING, AND CRUCIFIX. MESSRS. MARREL, FRANCE.



184. ORNAMENTALLY HILTED WEAPONS. M. MARCET, FRANCE.

This coal is free from smell during its combustion, and is for some uses preferable to common coal.

327 MADER BROTHERS, 1 *Rue de Montreuil, Paris*—Manufacturers.

Specimens of stained paper-hangings.

328 MORICEAUX & CAYEUX, *Mouy* (*Oise*)—Inventors and Manufacturers.

Patent pendulum-regulator, adapted for an hydraulic prime mover of one hundred-horse power: applicable to all kinds of flood and sluice-gates, without derangement of their machinery. It is capable of being fixed with great facility, so as to guarantee a period of six hours as the longest period during which it will be necessary to stop the works to which it may be attached.

329 MARÉCHAL & GUYNON, *Metz* (*Moselle*)—Glass Painters.

Painted glass-window:—1. St. Charles administering the communion to the plague-stricken: (glass-work of the sixteenth century). 2. A burgomaster. 3. A rose (of the thirteenth century).

330 MARESCHAL, JULES, 82 *Rue du Faubourg St. Martin, Paris*—Engineer.

Machines for mincing and mixing meats, soups, pastes, and vegetables. Patented. Especially adapted for sausage-makers and pastry-cooks.

331 MARREL BROTHERS, 27 *Rue Choiseul, Paris*—Silversmiths and Jewellers.

Large vase, gilt and oxydised, and adorned with sculptures, representing the battle of the Amazons, after Rubens. A book in ornamental cover and crucifix.

A group of these objects is represented in the Plate, 253.

Dressing-case, cups, hunting-knives, dagger, and other gold and silver articles. Some of these are represented in the Plate.

332 MARSAUX & LEGRAND, 14 *Rue de la Perle, Paris*; and 27 *Castle Street, Holborn, London*—Manufacturers.

Embossed brass ornaments for cornices and the decoration of rooms.

Cornices on velvet in imitation of papier-maché work.

Large garland of flowers, struck in one piece.

Plain cornices, stamped on a single piece of metal.

The process employed is an improvement on the old system of embossing, as it dispenses with joints and solderings.

An assortment of mouldings, cornices, ends for poles, curtain-bands, and cast holders.

333 MASSING BROTHERS & CO., *Luttelange* (*Moselle*), *Lyons*, and *Tarare* (*Rhône*)—Manufacturers. (Agents, HUBER & CO., 2 *Rue de Braque, Paris.*)

Silk plush for hatters.

334 OBRY, BERNARD, & CO., *Prouzel, near Amiens*—Manufacturers.

Various sorts of papers, for envelopes, pamphlet-covers, packing, writing, printing, drawing, hangings, &c.

335 HARDENG —, *Angers*—Manufacturer.

Two iron pianofortes, of a novel construction.

336 OPIGEZ & CHAZELLE, 83 *Rue Richelieu, Paris*—Manufacturers.

Various articles of dress for ladies: rich Lyons silk-embroidered fabrics. Shawl, the texture of needle-work, India imitation.

337 PAGET, JOS. A., *Beziers* (*Hérault*)—Clock-maker.

New system of spring-box watch, called "Paget's watch." Patented.

338 PAILLART BROTHERS, 17 *Rue du Grand St. Michel, Paris*—Tanners and Curriers.

Calf-skins and sheep-skins for covering cylinders, in spinning-mills; cow square hides for wool and cotton cards; plates and ribbons for wool and cotton cards (ready for use); rubbers for spools of equalised buff for spinning wool; muffs for mechanical combing; and straps for machinery.

339 PAPAVOINE & CHÂTEL, *Rouen* (*Seine-Inférieure*)—Engineers.

Patent card-making machine.

Cards of various sorts in leather and felt cloth.

Patent card-ribbon, for cotton and wool spinning-machines.

340 PARADIS, DE RUOLZ, & CO., 6 *Faubourg Poissonnière, Paris*; and MM. DEVAUX & CO., 62 *King William Street, London*.

Specimens of waterproof painting, by a new process invented by Ruolz, chemist. Patented in France and England.

341 PARDOUX, —, *Randon* (*Puy de Dôme*)—Engineer.

Ploughs, with fore-carriage and fixed mould-board, large size, entirely of iron, possessing the following advantages:—It allows of a deep incision without deviating from the perpendicular line; economises the labour of the animals, and is less fatiguing to the labourer, who has only to direct the team, and to turn the plough at the end of the furrow.

Smaller plough, and similar to the above.

Plough, with moveable mould-board and fore-carriage, available to the most uneven lands; and, on turning the mould-board at the end of the furrow, the labourer is enabled to return by the same line.

Plough, with moveable mould-board, single wheel, and double handle. Various other ploughs, all of which, with these, are patented.

342 PAUWELS, A., 179 *Faubourg Poissonnière, Paris*—Inventor.

Regulator and moderator: machines for regulating the flow and pressure of gas.

Fireproof retort for gas-works. Patented.

343 PERRON, E., 14 *Rue Vivienne, Paris*—Manufacturer.

Various samples of chocolate, manufactured by a new process.

344 PESCHELOCHE-VIVIN, —, *Epernay* (*Marne*).

Clocks, watches, and various clock-works, with new movements.

345 PETIT, SON, & CO., *Nantes*—Manufacturers.

Mill-stones, suitable for grinding wheat, in general use in the west of France.

347 PICARD, E., 3 *Rue de Lenôtre, Rouen*—Designer.

Designs for woollen, cotton, and other printing; white-ground design, chintz fashion, with portrait of the Queen of England.

348 PICAULT, GUSTAVE FRANÇOIS, 46 *Rue Dauphine, Paris*—Inventor and Manufacturer.

Patent oyster-opener, with which a child can open 10 oysters per minute; saw-edged carving knife, of superior temper and edge; shear-knife, for carving poultry; and various articles of fine clasp cutlery.

[The shear-carving knife, the oyster-opener, and the saw-edged carving-knife, are useful inventions. The first article is chiefly intended for cutting up fowls at table; and, as its name denotes, it unites a carving-knife and scissors in one instrument; so that what cannot be easily separated by the knife, can be cut through by the scissor part without mangling the fowl. The second article consists of an apparatus like a nut-cracker, which on one leg holds the oyster, and on the other a sharp chisel to cut the bivalve joint; by pressing the legs together, the oyster is instantly opened. The saw-edged carving-knife will, from its construction, cut through bones and meat, without giving the carver the trouble occasioned by the ordinary carving-knife.—R. W.]

349 **Pichot, A.**, 20 *Place d'Armes, Poitiers* (*Vienne*).

Imitation of marquetrie, and inlaid work on thick and thin ivory. A new invention.

[This process is stated to be applicable to all the requirements of the art of producing marquetrie and inlaid works, and is more easy of execution and of adaptation to uneven surfaces.]

350 **Pierret, —**, 21 *Rue des Bons Enfants, Paris*—Clockmaker.

Globe-clock, according to the latest discoveries. New system of alarum-clocks. Portable alarum-watches.

351 **Pillaut & Co.**, 3 *Rue Vivienne, Paris*—Manufacturers

Elastic and orthopedic dress, belt, and stays.

352 **Renouard, Jules, & Co.**, 6 *Rue de Tournon, Paris*—Booksellers,

Various publications connected with history, science, fine arts, education, bibliography, political economy, &c.

353 **Reynier, Cousins**, *Lyon* (*Rhone*), and 19 *Rue Puits Gaillot*—Manufacturers.

Silks for neckerchiefs, shawls, scarfs, dresses, and parasols.

354 **Richer, François**, *Gouvix* (*Calvados*)—Producer.

Two fleeces of rams of a pure breed, two years old.

355 **Riess, Martin**, *Dieuze* (*Meurthe*)—Manufacturer.

Samples of gelatine and isinglass used in the preparation of textures, silk stuffs, clearing of wines, &c.

356 **Bietry & Son**, 102 *Rue Richelieu*—Manufacturers.

Broché and embroidered shawls; cachmere for dresses.

357 **Robert, Adolphe**, *Sancerre* (*Cher)*—Clockmaker.

New repeating system for watches and clocks. Patented.

358 **Rojon, Jean Leopold**, 51 *Quai Valmy, Ruelle des Lilas, Paris.*

Prepared and improved emery, used in polishing plate-glass, lenses, polished steel, cutlery, fire-arms, precious stones, mechanical instruments, &c. Prepared emery-paper and artificial emery stone. Impalpable emery powder, used in polishing Daguerreotype plates.

Venetian and French tripoli, pumice and rotten-stone.

Impalpable colours, ground by a mechanical process.

Specimens of colours for painting on porcelain and enamel, requiring much delicacy.

359 **Roulet, Gilly, & Chaponniere**, *Marseille* (*Bouches du Rhône*)—Manufacturers.

Palm-oil soap, for bleaching cloths, dyeing silk, &c.

360 **Rousseau, Louis**, 12 *Rue des Cinq Diamants, Paris*—Manufacturer.

Various preserved fruits.

361 **Roussel, Charles**, *Besançon* (*Doubs*)—Manufacturer.

Music composed with moveable types, and matrices of the tpyes.

362 **Rouxel, Frederic**, *St. Brieue* (*Côtes du Nord*)—Agriculturist.

Prepared flax, employed in hand and power looms.

363 **Ruez, Louis**, *Cambrai* (*Nord*)—Starch-maker.

Various samples of starch.

364 **Saget, —**, 17 *Rue Sainte Elisabeth, Paris*—Lamp-maker,

Light-house for the navy; flash-pipes, with parabolical reflector. Lantern for hydraulic crane; other lighting apparatus.

365 **De Sandoval & Co.**, *Tarbes* (*Hautes-Pyrenees*)-Manufacturers.

Various specimens of chocolate, manufactured by water-power.

366 **Sanson, Edmond**, *Evreux* (*Eure*)—Manufacturer.

Samples of ticking for stays, feather-beds, and furniture.

367 **Sauraux, Jean Vincent**, 21 *Faubourg du Temple, Paris*—Manufacturer.

A billiard table, in black wood, engraved in the buhl style, supported by four caryatides in copper; in the middle of each large side, there is a head, with various ornaments in fruits, designed and executed by the manufacturer. This billiard table is not altered by change of temperature, the wood being dried by a new patent method.

368 **Savary & Mosbach**, 2 *Rue Vaucauson Mardré St. Martin, Paris*—Jewellers.

Imitations of diamonds, precious stones, and massive pearls.

369 **Seireaux, —**, *Rue sur le Prince, Paris*—Manufacturer.

A machine, of great delicacy, for the equal measurement of a straight line. It is principally adapted for philosophical experiments relating to the expansion of liquids in articles.

370 **Schmautz, C., senior**, 5 *Rue du Cherche, Paris*—Manufacturer.

Various descriptions of leather and of rollers for lithographic printing, for copper-plate printing, and of plating rollers for engravers.

371 **Schoenenberger, —**, 28 *Boulevard Poissonnière, Paris*—Producer.

Index of the concerts of the national conservatory of music. Classical catalogue for pianists and actors.

372 **Seguy, —**, *Thezan* (*Hérault*)—Engineer.

Wheel-plough.

373 **Sénéchal, —**, 41 *Rue des Solitaires, Belleville, near Paris*—Engine-worker.

Hemming machine, suitable to the sewing of coarse linen cloths.

Machine for cutting gloves, made of skin or other materials. Patented.

374 **Silbermann, Gustave**, *Strasbourg* (*Bas-Rhin*)—Inventor and Printer.

Letter-press of various descriptions, executed by a new process.

A frame containing a portion of a window of Strasburg Cathedral, drawn to the 20th of its original size, by Mr. Baptiste Petit-Gérard, glass-painter at Strasburg, and printed in colours under the direction of the exhibitor.

All the impressions in colours are produced entirely by typography, without being retouched.

A frame containing a church window of smaller size, composed and drawn by Mr. Klein, painter at Strasburg, and eight ornamental drawings, by Mr. Toudouze.

A frame containing 12 different subjects, printed in colours.

A geological map, the text of which has been engraved on stone, and the tints printed by the typographical press.

Six drawings of old German military costumes, engraved on wood, and printed in colours. The skies of these drawings, and the wall behind the life-guards, are new applications of typography.

An interior, printed in imitation of sepia.

A Gothic window, representing in its upper part a church-window, with the armorial bearings of printers; the lower part of it showing a view of the Cathedral of Strasburg, and several other monuments of that city.

Two works in quarto, and one in octavo, printed in colours and embellished.

Various boxes of French soldiers, printed in oil colours, and mounted upon pasteboard as toys for children.

375 Simonet, Mlle. Virginie, 161 *Rue St. Jacques, Paris*—Producer.

Copy, on porcelain, of Mr. Ingre's portrait of L. Cherubini.

376 Bouxwiller Mines Joint Stock Company, Mr. Charles Henry Schatenman, Manager, *Bouxwiller* (*Bas Rhin*).

Purified and common alum; sulphate of iron; Prussiate of potassium; Prussian blue; glue; ammoniacal productions. Products of the working of a mine of aluminus schist. From this schist are manufactured, annually, 2,200,000 lbs. purified and common alum, and 1,760,000 lbs. vitriol of iron. The production of chemicals amounts annually to 880,000 lbs. prussiate of potash, yellow and red; 44,000 lbs. Prussian blue; 132,000 lbs. bone glue; 22,000 lbs. white phosphorus; 88,000 lbs. sal ammoniac; 660,000 bone black in grains and powder.

377 Joint Stock Company of the Paper Mills of Souche (*Vosges*), Mr. Mauban, Agent, 5 *Rue du Pont de Lodi, Paris*—Manufacturer.

Various sorts of writing, painting, hanging, test, and flower papers; imitation of India paper.

378 The Slate Company of Rimogne, and of St. Louis-sur-Meuse, Producers.—A. Moreaux, Registrar.

Various samples of Rimogne slates, and grey slates of Deville.

The slate quarries of Rimogne, after having been worked during many ages, are, at the present day, the deepest in all France. The vein of the present dyke in which this slate formation occurs is the thickest that is known. These subterranean labours, especially those carried on at the great dyke, present mining operations carried on upon a scale of the most interesting and remarkable character. Besides these quarries in Rimogne, the Society possesses, at Beville, the slate works at St. Louis-sur-Meuse, one of the most ancient along the course of the Meuse. It is this establishment which has given its name to that variety of slate called the "Grand St. Louis."

The slate of Rimogne, which is of a beautiful azure-blue colour, is remarkable for its tenacity and strength. Far from becoming disintegrated, or decaying through the action of time, it acquires, by exposure in the open air, increased hardness and consistency; its surface becomes more compact and polished; and upon being struck, it gives out a clear metallic sound, indicating a property or temper such as is not possessed by slates of ordinary quality, for those emit an earthy sound.

It is ascertained, that when slates, well adapted for manufacture, are quarried from great depth, they are all of them found to be of quality superior to that exhibited by slates that have been dug under different conditions of depth, &c. This is the case in other localities, and especially so in Anjou. Some prejudices exist on this subject which requires to be noticed. In that portion of the Department de l'Aisne, bordering upon Belgium, no slates are either known or seen but those of Pamay. On the confines of the Department de l'Aisne, and throughout all those portions of that department which are situated on the Oise, as far as the river l'Aisne, we meet with the grey slate formations of Beville. These, in their turn, supply the Department of the Marne. At some particular spots the three kinds of slates are found all united. At Qaux, they employ no other description of slates but those of Angers.

It is found that the slates quarried in the Department of Ardennes is not inferior in point of beauty, or in the good properties of any other slate; that, at the same time, the slate of Rimogne has in certain respects a degree of superiority; the rock which produces it being extracted in masses of a more homogeneous structure, exhibits a more sparry cleavage, and promises a much higher degree of hardness.

This Society manufactures annually 35,000,000 of slates of various descriptions: its slates are used for government buildings.

[The slates from Rimogne and other places in the Ardennes are of fine quality, and often extremely crystalline. They underlie the whole carboniferous series of Belgium, and are probably of Devonian date. They are a good deal used, and extend for some distance.—D. T. A.]

379 Ourscamp Society, Peigné Delacourt, Manager, (*Oise*), 14 *Boulevard Poissonnière, Paris*—Manufacturers.

Samples of thick calicoes (called long cloths and Wigans) woven by hand.

380 Sœhnée Brothers, 17 *Rue des Vinaigriers, Paris*—Manufacturers.

Various sorts of varnish, for leathers, wood, and metals, and for oil and water-colour paintings.

Natural flowers preserved by a chemical process.

381 Soins and Son, *Esquermes-les-Lille* (*Nord*)—Dyers.

Linen twills dyed and satined; cotton twills dyed and glazed, by a new patent process.

382 Steinbach, J. J., *Petit Quevilly, near Rouen,* (*Seine-Inférieure*)—Manufacturer.

Samples of starch, fecula, and gums, chiefly used in print-works.

383 Steiner, Charles, *Ribeauville* (*Haut-Rhin*)—Manufacturer and Printer. (Agents in London, J. S. de Gaetan & Co., 3 *Bow Lane, Cheapside.*)

Plain cotton fabrics, dyed Turkey red; shawls and handkerchiefs of the same colour, with white ground, and several colours introduced. Exhibited for the brightness and harmony of the pattern, and the richness of the dye.

384 Sturm, Pierre Henry, 28 *Rue de l'Ancienne Comedie, Paris*—Artist.

Paintings on enamel:—

The Virgin, with a green cushion, painted in the Louvre, after the original by Andreas de Solario.

Æneas relating to Dido the disasters of the City of Troy, painted in the Louvre, from the picture by Peter Guerin.

Virgin, from Raphael, the original picture of which long formed a part of the gallery of the Palais Royal, and which now belongs to the Marquis of Stafford, London.

Virgin, taken from the Assumption of Murillo, contained in the Spanish gallery in the Louvre.

Florist, whole length, from Greuze.

Shepherdess carrying a basket of flowers, from Fragonard.

Nosegay of dahlias. Nosegay of roses, tulips, &c.

385 **Tailbouis, E.**, 15 *Rue des Mauvaises-Paroles, Paris*—Manufacturer.

Silk chenille scarf; point lace; head dresses; square handkerchiefs; embroidered shawls; and stockings for children.

Silk half-hose; taffety and half silk gloves; embroidered gloves; long mitts, and tulle in gold.

Thread taffetas, Scotch thread, and wool beaver gloves; gaiters and half gaiters.

Wool knitted scarfs, and childrens cloaks. Wool and silk knitted children's and ladies' cloaks; net cloaks, scarfs, and head-dresses.

386 **Tailfer, J. B.**, 9 *Rue St. Etienne, Batignolles (Seine)*—Inventor.

Patented dynamometric machines, to ascertain the amount of horse-power of steam-engines. Inventor and patentee, M. Taurines. Patented in France and England.

387 **Taillandier, Louis Henry**, *Evreux (Eure)*—Manufacturer.

Various sorts of tick for bedding and stays.

388 **Tambour-Ledoyen**, 49 *Rue Neuve St. Augustin, Paris*—Manufacturer.

Gloves cut and manufactured on a new plan, Privat's, which imparts a perfection and regularity to the article not previously attained.

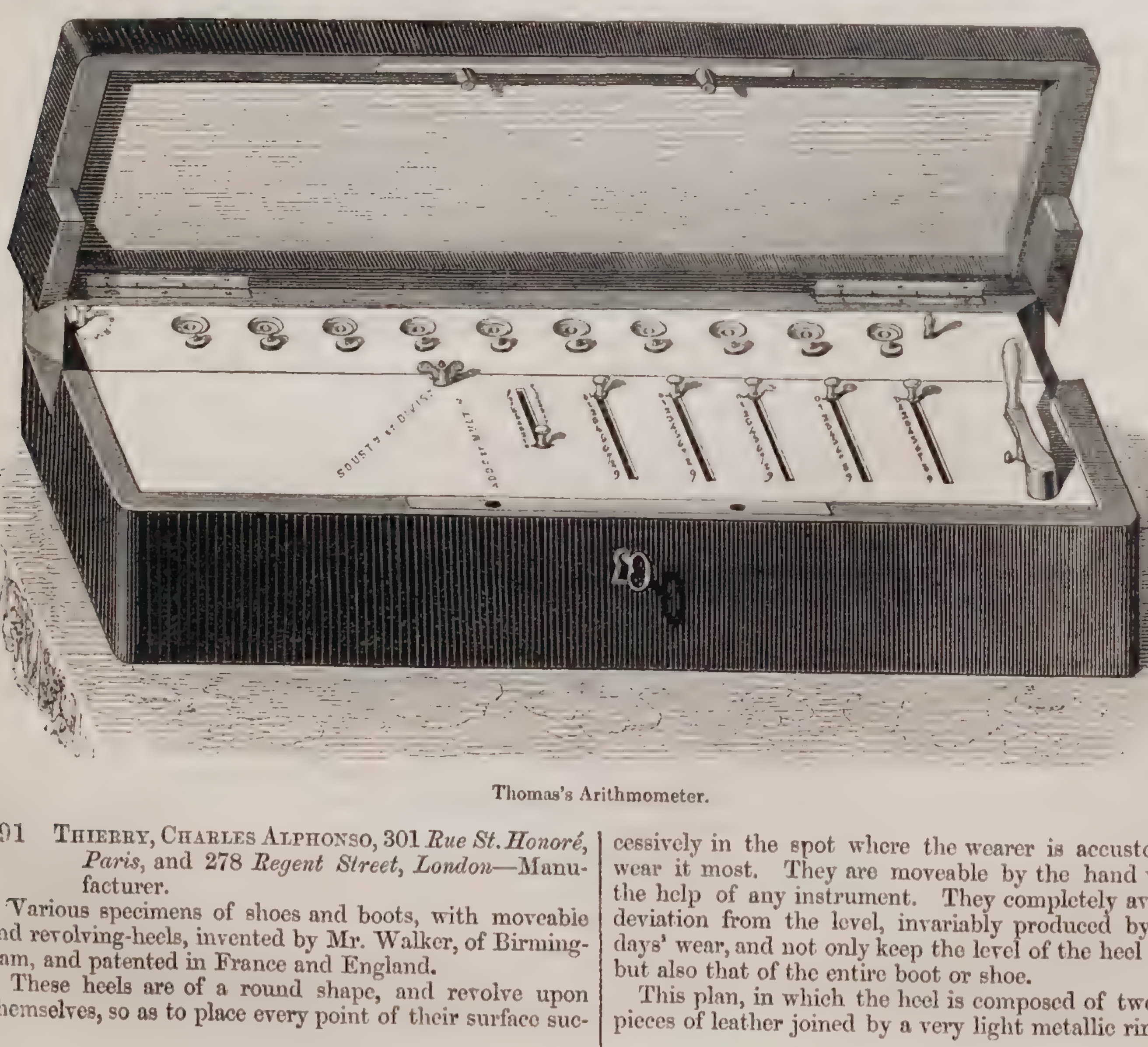
389 **Tellier, —**, 122 *Grande Rue, Dieppe (Seine-Inférieure)*—Ivory Carver.

Various specimens of carved ivory.

390 **Thomas, Charles Xavier**, *Colmar*, and 13 *Rue du Helder, Paris.* (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury Square.*)

Arithmometer, a machine for performing arithmetical calculations. Invented by the exhibitor, and patented in France and Great Britain. This apparatus is represented in the cut below.

[This apparatus appears to be intended for performing operations in the four common rules of arithmetic. It is not unlike an arrangement similar to that of Napier's rods or bones. The "Rabdologia," or book containing the description and use of these rods, was published in 1617, three years after the "Canon Mirificus Logarithmorum," a work which changed the face of Europe as to arithmetical calculations, and the value of which can never be superseded by any new invention. The rods were made of bone, ivory, or wood, and had their faces divided into nine little squares, the latter being diagonally divided into two triangles. In these were written the numbers of the multiplication table, so that the units were in the triangle on the right, and the tens in that on the left. By arranging these rods with the hand, according to certain rules, the common operations of arithmetic were performed; and by the application of a little ingenious machinery, it is easy to see how by turning a handle, the same manipulation could be effected, and the same results obtained. The calculations proposed to be effected by Professor Babbage's machine were of a much higher order.—R. W.]



Thomas's Arithmometer.

391 **Thierry, Charles Alphonso**, 301 *Rue St. Honoré, Paris*, and 278 *Regent Street, London*—Manufacturer.

Various specimens of shoes and boots, with moveable and revolving-heels, invented by Mr. Walker, of Birmingham, and patented in France and England.

These heels are of a round shape, and revolve upon themselves, so as to place every point of their surface successively in the spot where the wearer is accustomed to wear it most. They are moveable by the hand without the help of any instrument. They completely avoid the deviation from the level, invariably produced by a few days' wear, and not only keep the level of the heel perfect, but also that of the entire boot or shoe.

This plan, in which the heel is composed of two round pieces of leather joined by a very light metallic ring, is so simple that it may be worked by any manufacturer. It does not increase the weight of the boot or shoe, and combines durability of the heel, and the saving of repairs, with the advantages of preserving the primitive shape of the boot, and preventing the foot from falling on either side.

394 Tremaux, Pierre, *Charcey, near Bourgneuf* (*Saone and Loire*)—Architect.

Patent improved harmonium, lessening at pleasure the sonorousness of the low notes.

395 Du Tremblay, Alexis, 3 *Rue de Milan, Paris*—Inventor.

Drawings upon various objects made of Dutch ware, porcelain, or crystal, obtained by a patent process.

396 Tricot Brothers, 25 *Rue Stanislas, Girardin* (*Seine-Inférieure*), *Rouen*—Manufacturers.

Hand-loom fabrics composed of various materials, such as cotton, wool, thread, or silk; cotton fabrics, and various fabrics for exportation.

397 Tudot, —, *Moulins* (*Allier*)—Designer.

Lithography after the black style. New process.

398 Tulou, —, 27 *Rue des Martyrs, Paris*—Manufacturer.

Improved flutes, with a key in C, in which are introduced important modifications. The keys are arranged so as to enable the player to produce correctly and with ease certain generally defective notes. The springs are of gold and never require oiling.

399 Acklin, 36 *Rue Bourbon Ville-neuve, Paris*—Machine-maker.

Jacquard loom, with an apparatus for the substitution of the pasteboard of the Jacquard cards (patented in France and England); diagram representing the details of the apparatus.

400 Albinet, jun., 19 *Rue de la Vieille-Estrapade, Paris*—Manufacturer.

Woollen, merino, and cotton blankets and counterpanes of every kind.

401 Archambault, A., 124 *Rue St. Lazare, Paris*—Carver and Frame Maker.

Specimens of mouldings. Frames of various kinds, fluted and plated.

402 Arnavon, H., *Marseille* (*Bouches du Rhone*)—Manufacturer.

Various samples of soap for exportation.

403 Aubert & Noel, 265 & 267 *Rue St. Honoré, Paris*—Manufacturers.

Samples of brandy, made of alcohol and fruits of various kinds, by distillation in a vacuum, viz.:—Peach, raspberry, apricot, strawberry, white or red currant, black currant, mulberry, greengage, white damson, black damson, plum, and sweet cherry.

In this manufacture, about 200 lbs. of these fruits yield nearly seven quarts of black cherry brandy, having the flavour of prussic ether.

These brandies may serve as the basis for all compositions of fruit tafias, without prejudice to the delicacy of the flavour. The brandy has the taste and flavour of the fruit. It is mild, and destitute of the burning taste common to wine brandy. Pure or mixed with water it is an agreeable drink, and may from its variety of taste and flavour advantageously replace other spirituous mixtures.

The liqueurs prepared from these various sorts of brandy, are called marasquin, on account of their analogy to those of Venice and Trieste. They are manufactured from the fruit of a variety of laurels (cherry bay), called in Italy Marasca.

The distillation in vacuo, deprives the mixture of the coarse essential oil, which remains after ordinary distillation, and which contains the resinous and heterogeneous substances, so disagreeable to the palate and injurious to the stomach. The distillation in vacuo is carried on at from 40° to 50° of temperature instead of 120° to 150° in the ordinary process.

The marasquin, from the wild or brandy cherry, is a cephalic. The cherry is tonic and mild. The peach approximates to the cherry. The strawberry is diuretic, and beneficial in phthisical complaints and weak constitutions. The raspberry is cooling and antiscorbutic; mixed with water, it is a sweet and agreeable beverage. The flavour of the black currant is very superior, and the operation of the vacuum instead of weakening, concentrates the properties of the fruit.

404 Aucher, —, 44 *Rue de Bondy, Paris*—Manufacturer.

Two upright pianofortes, the one with oblique strings and fixed finger-board, the other with vertical strings and moveable finger-board. A new iron bar for upright pianofortes, not affected by the changes of the weather, and suited for exportation.

405 Amuller, E. F., 53 *Rue du Faubourg Poissonnière, Paris*—Manufacturer.

Model of a roof covered with an improved species of tile.

The tile in question is flat, and the edge by which it is encircled opens at the bottom in order to admit of a free egress for the rain water. The inner edge, which is shaped like a horse-shoe, occupies the upper part of the tile. These two edges correspond with the wedgings which the tile has on its reverse side, so that by covering the upper part of its surface with two other tiles placed side by side, the two edges are wedged in and entirely covered by the two upper tiles, and nothing is seen of the under tile but the arrow-head of the lower part, which allows the water to run on to the under tile. As the jointing of the two tiles is always covered by the upper one, and as the wedgings of the edges are very correct and tolerably deep, it is impossible for the snow or rain to penetrate through these jointings, or to be driven by the wind through the divisions of the wedgings.

406 Baillière, J. B., 19 *Rue Hautefeuille, Paris*—Bookseller.

Illustrated volumes on medical science and natural philosophy, with coloured plates. Natural History of Molluscs, by Ferussac and Deshayes, with coloured plates.

407 Bailly, Comte, & Son, *Morez du Jura*—Manufacturer.

A travelling-clock, striking the quarters, and going for 30 hours.

408 Bally, P., 25 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.

Clocks of various sizes and descriptions. Watch and clock movements.

409 Bapterosses, Jean Felix, 27 *Rue de la Muette, Paris*—Manufacturer.

Specimens of porcelain knobs of every kind.

410 Barral, C., *Ganges* (*Hérault*)—Silk Throwster.

Samples of raw and thrown silk, white and yellow.

411 Basely, —, 11 *Rue Constantine, Paris*—Manufacturer.

Stands for portatable watch and clock movements.

412 Batailler, Auguste, P. E., *au Chateau du Portail, near Montargis* (*Loiret*)—Manufacturer.

Specimens of agricultural implements.

413 Bauchet, Verlinde, *Lille* (*Nord*)—Manufacturer.

A machine to rule paper on both sides at the same time.

Account-books for commercial purposes.

414 Bayard, Hippolyte, 81 *Rue de la Paix à Batignolles* (*Seine*)—Producer.

Seventeen photographic drawings contained in three frames.

[These photographs are "prints," to use a recognised term among calotypists, from glass negatives. They represent views of buildings, architecture, &c., statues, and bas-reliefs. They have not been touched by the artist after having been fixed. The sharpness of outline of proofs obtained from glass negatives, and the freedom from a certain woollyness of texture inseparable from proofs obtained from paper negatives, afford a certain recognition of them.—R.E.]

415 Bayret Brothers & Co., *Choisy-le-Roi, depôt in Paris*, 16 *Rue Mauconseil*—Manufacturers.

Specimens of common and morocco leather.

416 Bazin, Armand, *au Mesnil St. Firmin* (*Oise*)—Manufacturer.

A draining plough.

417 Borie, Brothers, 24 *Boulevard Poissonnière, Paris*—Inventors and Patentees. (Agent in London, Edward Elliot, 33 *Bucklersbury, Cheapside.*)

Machine for making tubular bricks, drain-pipes, tiles, &c.

The tubular bricks made by this machine are exhibited for strength, lightness, impermeability to damp, noise, cold and heat, their facility for taking any required forms and dimensions, and cheapness of construction.

They are distinguished from the ordinary hollow bricks by being formed of a series of small hollow tubes, each tube being separated only by a very thin layer of material.

They are formed by means of a machine to which are fitted several forms of dies, capable of producing bricks of any section, these dies being constructed on a new principle. The preceding cuts represent different kinds of bricks made by the exhibitors' patent machine. Fig. 1, a brick of ordinary size; fig. 2, a double brick, called a stretcher; fig. 3, a double brick, called a header; fig. 4, a quadruple brick, of wall breadth. The bricks can be manufactured of any kind of clay, plastic marl, or loam mixed with clay; and if material be used containing stone, large sand or gravel, or pieces of lime, the machine separates them with ease. In use, they present as much resistance to perpendicular and transversal pressure, as the common bricks: they are rendered more dense and hard by the perfect and uniform baking and burning, which they undergo, in consequence of the heat passing through the hollow tubes, and thus acting on all parts of the brick.

The tubular bricks are very light compared with the common bricks of the same size and material: they never weigh more than 50 per cent. of the common bricks, and they are particularly adapted for the construction of dwelling-houses, partitions, roofs, furnaces, vaults, chimneys, &c.

As non-conductors of sound, heat, cold, and damp, they will be found greatly superior to common bricks, as they permit the air to circulate through the walls. In summer, houses built with them would be cooler, in winter warmer, and at all times drier.

The tubular bricks can be made by the machine of any given shape, section, or dimensions, from the ordinary size up to eight or ten times that size, and thus can be used as large stones, an advantage which cannot be obtained with common bricks, in consequence of the expense of baking, and the danger of fusing the clay.

The tubular bricks can be made from 15 to 40 per cent. cheaper; the expense of moulding being one-fourth; of material, one-half; of baking, nearly the same; and of carriage one-half. There is also a saving of half the time and ground necessary for drying. The machine is portable and can be worked by steam, horse, water, or hand power; the latter being preferable as it is more easy and less expensive to move the machine to the place containing the material, than the material to the machine. One person can mould from 3,000 to 4,000 bricks of ordinary size per day.

Fig. 1.

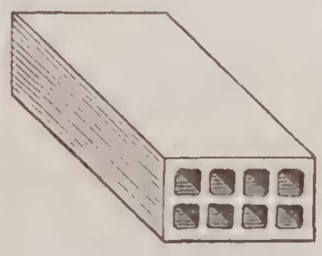


Fig. 2.

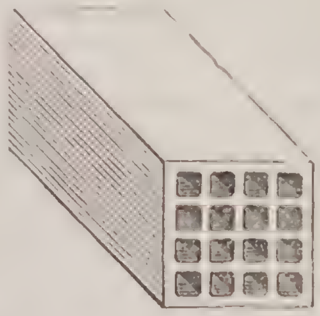


Fig. 3.

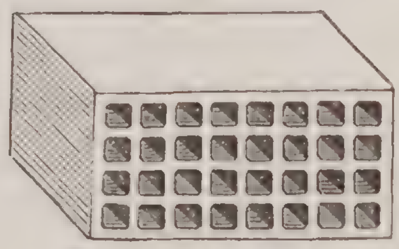
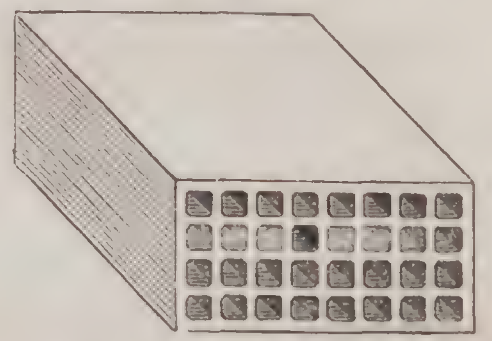


Fig. 4.



The machine also produces drain-pipes and roof-tiles, of all shapes and sizes, which are of superior quality, in consequence of the pressure to which the clay is subjected, and the separation of foreign material by the machine.

418 Berger, François, *St. Etienne* (*Loire*)—Manufacturer.

Fancy fowling-pieces of various kinds.

419 Clesinger, T., 32 *Rue de Penthièvre, Paris*—Sculptor.

Statue of a bacchante in marble.

420 Bernard, —, 34 *Rue Constantine, Paris*—Machine-maker.

A filtering machine.

421 Bernardel, Sebastien, Phillippe, 21 *Rue Croix des-Petits-Champs, Paris*—Manufacturer.

Two bass-violoncellos, two altos, and three violins; with bows. After the first masters, viz., Amati, Straduarius, Joseph Guarnerius, and Maggini.

422 Berthelot, Nicolas, *Croyes* (*Aube*)—Inventor and Patentee.

Circular knitting frame on a new principle to overcome the difficulties in the manufacture of hard or slightly flexible materials by the ordinary circular or rectilinear knitting frames. By this frame cotton, flax, hemp, wool, silk and even iron wire can be manufactured into thread with great facility. It is said to produce, with fine materials, a superior fabric to those manufactured by the ordinary means.

In this loom the sinker wheel is omitted, and its place supplied by a circle or ring which regulates the motion of the sinkers. As soon as the thread enters, the sinkers retain it in the loop of the needles, until after the passage of the presser wheel, and do not leave it until the moment when the mesh, pushed off by the pushers, falls over the lower mesh. It is thus that a regular forming of the meshes is produced. Each mesh being taken, held, and released successively, the hardest and least flexible materials cannot escape from the loop of the needle until the mesh is formed. It also permits of the needles being placed close together, and the construction of frames of a very fine gauge.

The frame is furnished with a counter, which indicates the number of turns. On the circumference of the frame may be placed 1, 2, 3, or 4 sets of working parts; and thus 1, 2, 3, or 4 meshes may be made on each needle at each revolution. The machine makes one revolution per second.

424 BESSON, G. A., 7 *Rue des Trois Couronnes, Paris*—Manufacturer.

Cornet-à-piston, in brass and silver.
Ophicleide, harmony trumpet.
Altos, violoncellos, and a double bass.

425 BÉZAULT, JULES, & Co., 18 *Rue des Vinaigriers, Paris*—Machine-makers.

Hydro-extractor on a new plan, provided with break and disengager, and capable of revolving 2,000 times a minute. The machine is self-lubricating, very simple and easy to set; it will dress, in a few minutes, without injury, all kinds of materials, cloths, felts, &c.

A horse gin crane, a ventilator and pumps, with continual motion. An apparatus for making gaseous waters either in large or small quantities. Distillatory apparatus; durable gear and cushions of vegetable and animal matter for diminishing friction.

426 BODIN, J., *Rennes (Ille and Vilaine)*—Manufacturer.

Four ploughs and a harrow.

427 DE BOISSIMON, C., *Langeais (Indre and Loire)*—Manufacturer.

Ornamental vases. Stoneware articles. Fire-bricks.

428 BOLAND, ANTOINE, 52 *Rue St. Louis, Paris*—Inventor.

A mechanical kneader for the use of bakers, and adapted for washing, &c.

429 BONNAL, VICTOR, & Co., *Montauban (Tarn and Garonne)*—Silk Throwster.

Raw silk, white and yellow, spun by steam. Pieces of unbleached silk for bolting flour.

430 BONTEMS, —, 80 *Rue de Cléry, Paris*—Manufacturer.

A bronze clock surmounted with mechanical birds.
Group of mechanical birds.

431 BOURHON, LOUIS AMOND, 16 *Place de la Madeline, Paris*—Inventor.

A hand or horse mill, in which the upper stone is stationary, with its bolting apparatus.

432 BOUDON, DE ST. AMANS, *Lamarque, near Agen (Lot and Garonne)*—Manufacturer.

New process for the application of vitrifiable colours to chinaware, and all ceramic substances hardened and enamelled by fire.

433 BOULONNOIS, —, 48 *Rue St. Sebastien, Paris*—Manufacturer.

Artistical bronzes of various patterns, &c.

434 BOURGOGNE, JOSEPH, 2 *Rue d'Arcole, Paris*—Manufacturer.

Microscopic preparations, transparent and opaque, forming 30 series of objects in connexion with physiology, anatomy, pathology, hygienic substances, secretions, &c. Vegetable organic structures. Comparisons of fabrics and mode of production. Detections of commercial frauds. Mineral-crystallization, natural and artificial; organized fossil bodies; characteristics of the different earths, &c.

435 BRAQUENIE & Co., 16 *Rue Vivienne, Paris*—Manufacturers.

Patent carpets, screens, and table-covers. Aubusson carpet, without seams, and with a perfect pattern on each side. Tapestries for curtains, not requiring any lining, the pattern being the same on both sides; they are particularly adapted to doorways or other places where two curtains would otherwise be necessary.

436 BRETON BROTHERS, & Co., *Pont de Claix, near Grenoble (Isère)*—Producer.

Two bundles of paper, with drawings.

437 BRICARD & GAUTHIER, *Woincourt (Somme)*, and 3 *Rue Pavée, St. Sauveur, Paris*—Manufacturers.

Various articles of locksmiths' work, and fluted cylinders for spinning manufactories.

438 BRIÈRE, ADRIEN, 24 *Boulevard Beaumarchais, Paris*—Manufacturer.

Samples of arsenical acid; Scheele's green, &c.

439 BRIET, JEAN CLAUDE, 22 *Rue Neuve St. Jean, Paris*—Inventor and Patentee.

Apparatus for the instantaneous manufacture of soda-water, lemonade, aerated wines, and other gaseous liquids.

440 BRISSET, EUGENE, 13 *Rue des Martyrs, Paris*—Machine-maker.

Improved iron lithographic printing press.

441 BROCOT, ACHILLE, 18 *Rue Charlot, Paris*—Manufacturer.

Ornamental clocks, medallions, and various objects in bronze, marble, &c.

442 BUFFET, jun., 4 *Rue du Bouloi, Paris*—Manufacturer.

Clarionets, on an improved principle; flutes, oboes, and bassoons, for military bands.

443 BURON, —, 8 *Rue des Trois Pavillons, Paris*—Manufacturer.

Optical and mathematical instruments; telescopes, of various shapes and sizes; telegraphic and marine telescopes; astronomical telescopes, of various novel and improved constructions; opera glasses, plain, double, and cylindrical; geodesical and nautical instruments; microscopes and achromatic lenses, mounted for Daguerreotypes, of different sizes.

444 CAFFORT, J., *Carcassonne (Aude)*, and at *Rue Neuve St. Jean, Paris*—Marble-cutter.

Samples of marble from Languedoc.

[The marbles of Languedoc are extremely varied, and include many of unusual beauty and good quality. Good colours and texture, hardness, magnitude of slab, and other qualities required for valuable marble are not often combined more perfectly than in some of the specimens here exhibited.—D. T. A.]

445 Carre, L., 43 *Rue Beaubourg, Paris*—Manufacturer.

Bronze, miniature, and daguerreotype frames.

446 Bance, jun., 27 *Rue Croix des Petits Champs, Paris*—Publisher.

"Architecture Mécanique," a work illustrated by examples of buildings, given in detail, and measured to a scale.

"Encyclopédie d'Architecture," a work in which the best architectural models are selected, and faithfully exhibited. Collection of architectural engravings, published under the direction of M. Calliat, architect.

"Le Louvre," by M. Duban. "La Bibliothèque Ste. Généviève," by M. L. Labrouste.

447 Leroux, —, *Mainguet, Nantes* (*Loire-Inférieure*)—Producer.

Specimens of the distillation of salt water.

448 Chapot & Selon, *au Viganilliers* (*Gard*)—Producer.

Lithographic stones, from the quarries of Vigan.

449 Chauvin, G., 10 *Rue des Graviliers, Paris*—Manufacturer.

Purses, purse trimmings, clasps, &c.; buckles, trinkets, and other polished steel articles.

450 Chavin, sen., *Moren du Jura* (*Jura*).

Various specimens of clock-making; pendulums and regulators. An enamelled dial. Varnished tin cases for clocks and regulators.

453 Chaverondier, H., *St. Germain, Laval* (*Loire*)—Manufacturer.

Various specimens of lace and fancy articles.

454 Clair, Godefroy, 63 *Rue Montmartre, Paris*—Manufacturer.

Wooden and silver flutes on different systems. Patent Boehm flutes.

455 Clement, Bourgeois Léon, *Moren* (*Jura*)—Manufacturer.

Specimens of watch and clock works. Kitchen jacks.

456 Cloet, Charles, *Lille* (*Nord*)—Manufacturer.

Pearl and unshelled barley. Vermicelli, of various qualities. Maccaroni (an imitation of the Neapolitan). Carolina rice. Wheat flour.

458 Colletta-Lefebvre, 9 *Rue Mandar, Paris*—Manufacturer.

Various snuff-boxes, in tortoiseshell, maple, palm-tree, and petrified wood, mounted with gold and other substances. Amateur snuff-boxes, with gold ornaments, Gothic characters, portraits, &c. Purses; cigar and needle-cases, &c.

459 Combet, —, 6 *Rue Grenetat, Paris*—Manufacturer.

Harmonic strings in silk and catgut for violins.

460 Cordier, Charles, 5 *Rue Carnot, Paris*—Sculptor.

Bust in bronze, on a column, a negro from Timbuctoo.

461 Corniguel, Charles, *Vannes, Morbihan*—Manufacturer.

Various kinds of leather.

462 Cournerie & Co., *Cherbourg* (*Manche*)—Manufacturer.

Iodine of potassium, sublimated iodine, chlorure of potassium, sulphate of potassium, &c.

463 Courtois, —, sen., 28 *Rue des Vieux Augustins, Paris*—Manufacturer. (Agent—J. S. de Gaetan, 3 *Bow Lane, Cheapside.*)

Musical instruments in brass, with curvilinear pistons, allowing the free passage of the air: bass, bugles, trombones, new horn, French horns, cornets, and double basses.

464 Toussaint, Eugene Nicolas, 4 *Rue de la Susseine, Paris*—Designer.

Design for a lace scarf.

465 Crespel, Dellisse, *à Arras* (*Pas-de-Calais*)—Agriculturist.

Various samples of wheat. Sowing machine.

466 Crouillier, Jn., 31 *Rue de Cléry, Paris*—Designer.

Designs for stuff printings.

468 Cusson, Pourcher, & Rossignol, *Clermont Ferrand* (*Puy de Dôme*)—Manufacturers.

Patent pistol, muskets, &c.

469 Cuvillier, H., sen., 16 *Rue de la Paix, Paris.*

Specimens of preserved food: Mussels, oysters, mushrooms, peas, and truffles.

470 Darras, Paul, *Tixin* (*Côte-d'Or*)—Manufacturer.

Specimens of materials employed in silk manufactories.

471 Dauphinot, Perard, *Isles sur Suippes* (*Marne*)—Manufacturer.

Merino fabrics of all colours, manufactured for Mr. F. Pascal, Paris, and for Messrs. Bradbury, Greatorex, and Beale, Aldermanbury, London. Dyed by Mr. Francillion, of Puseaux.

472 Delacour, Henri Parfait, 47 *Rue Vieille du Temple, Paris*—Manufacturer.

Specimens of horse-hair and vegetable silk fabrics.

473 Delvigne, Gve., 24 *Rue du Boulay, Paris*—Machine-maker.

Portable howitzer; priming-horn; and an apparatus for salvage.

Delvigne's shipwreck projectile is composed of a hollow wooden cylinder, which contains a line carefully rolled up. It is projected by a gun or howitzer, and during its flight towards the wrecked vessel the line inside unrolls itself. This apparatus may be used from the shore to the vessel, from the vessel to the shore, or, at sea, from one ship to another. It may be carried and managed by a single person, and is not costly. The charge of powder is two ounces; the range, three hundred yards; with larger sizes the ranges are much longer.

474 Daval, —, 17 *Rue de Cléry, Paris*—Upholsterer.

Decorations for apartments, and furniture.

475 Detir & Co., 162 *Rue du Faubourg St. Denis, Paris*—(Piano Workmen Society).

Upright pianoforte, with semi-oblique strings. Upright pianoforte, with vertical strings.

476 Deyeux, —, *Liancourt* (*Oise*), *and at* 7 *Rue Garancière, Paris*—Manufacturer.

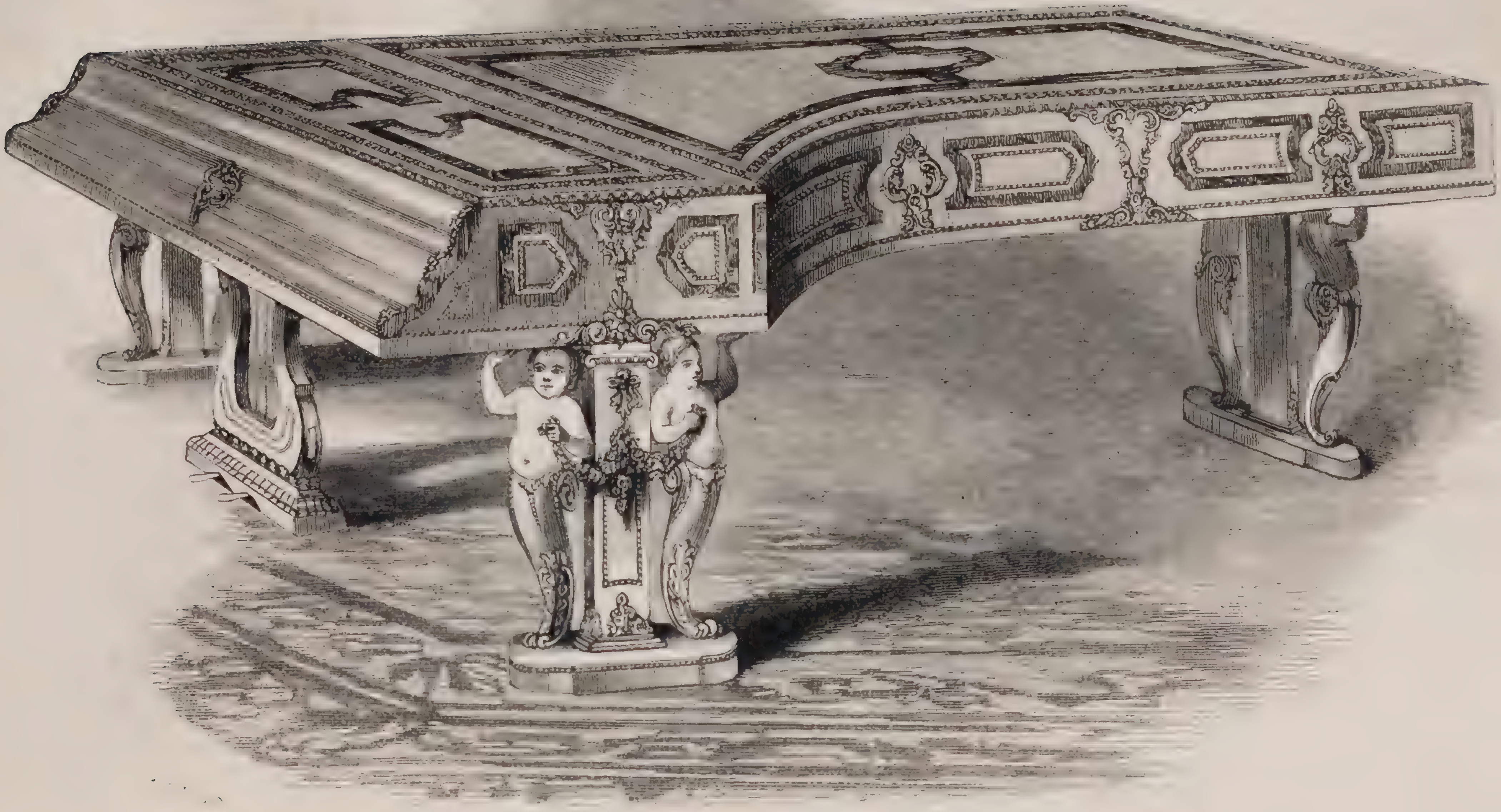
Fire-proof crucibles for melting copper, pure iron, steel, and other metals. Various chemical utensils.

477 Domeny, L. Jos., 101 *Faubourg St. Denis, Paris*—Manufacturer.

Specimens of harps. Upright pianofortes.

478 Donneaud & Co., 190 *Quai de Jemmapes, Paris*—Manufacturers,

Stearic acid; oily acid; light-house candles.



249. GRAND PIANO. M. ERARD, FRANCE.

479 DOREY, JULES, *Hâvre* (*Seine-Inférieure*)—Machine-maker.

A clock-dial, illustrative of a new system of lighting.

These dials, during the daytime, appear black, and show the figures in white; but at night, when the interior of the clock is illuminated, the figures become luminous, as also the hands of the clock, and the time is thus readily discerned. Several public dials have been illuminated on this principle, in Paris and Hâvre.

480 DUBREUILLE, DERVAUX, LEFEBVRE, & DE FITTE, *Wagnier le Grand* (*Nord*)—Manufacturers.

Samples of beet-root sugar.

481 DUBUS, sen., 58 *Route de Caen, à Rouen* (*Seine-Inférieure*).

Four cylinders for grinding emery.

482 DUCOMMUN, —, 28 *Boulevard Poissonnière, Paris*—Producer.

A fountain-charcoal filter, with a new kind of tap.

A box containing a pressure charcoal filter.

Patent travelling canteen in pewter, with charcoal filter.

483 DUFOUR, LOUIS, *Boulevard Beaumarchais, Paris*—Manufacturer.

Gilt, silvered, and fancy paper, manufactured by machinery.

Burnishing stones and plates for every species of gilding.

484 FORTIN, BOUTELLIER, *Beauvais*—Manufacturer.

Specimens of fine cloth, and felted cloth for pianofortes.

485 DUFOUR, JN. BTE., *Saumur* (*Maine and Loire*)—Producer.

Samples of causeways in asphaltic stones, composed of bituminous substances. Samples of natural and artificial bitumen for macadamising. Mosaic-work in natural stones, united together by asphaltic mastich.

[The use of asphalte in paving originated in France, and has been carried out more completely there than in England. The material is obtained from several places in France, of which Obsann (Bas-Rhin), Parc (de l'Ain), and the Puy-de-la-Poix (Puy-de-Dome), were for some time the chief. In these cases the bituminous matter was obtained from limestone; but of late very large quantities have been found at Bastenne, in the south of France, about 15 miles north of Orthez. The bitumen here occurs in a bed from 10 to 15 feet thick, with occasional thick layers of shells. Above and below it are sands. When fresh, this bitumen is easily cut, and is then purified by boiling in a large quantity of water two or three times, and allowing the sand to settle at the bottom. After a few days' exposure. it becomes incapable of purication on account of the hardness having increased so much. In using it, the bitumen is boiled with sand and pebbles.—D. T. A.]

486 DUMAS, ANTHELME, 272 *Rue St. Honoré*—Manufacturer.

Specimens of various gas-burners.

487 DUMEREY, —, 45 *Rue des Petits Ecuries, Paris.*

A machine employed in the manufacture of shoes, &c.

Plates for engraving music.

488 DUMONT, FRANÇOIS LS. HRI., *Douai* (*Nord*), *Rue des Wetz*—Tanners.

Strong leather from Buenos Ayres.

489 MONTIGNAC, —, 6 *Rue Beauregard, Paris*—Goldsmith and Jeweller.

Specimens of jewellery.

490 DUNAIME, J. A., 18 *Rue Lepelletier, Paris*—Producer.

A four-wheeled carriage, of the description called Town-Berline. This carriage is represented in the illustration on the next page.

491 DUNDOY, MAILLARD, LUCQ, & Co., *Maubeuge* (*Nord*)—Manufacturers.

A variety of articles of general ironmongery.

Tools and portions of spinning apparatus for all descriptions of spinning, both in wool, flax, cotton and silk.

[The establishment represented by these exhibitors is one of great extent and importance. A large number of artizans are connected with it; and the quantities of raw material used annually are very great. The greater portion of the articles exhibited are for home use, but others are exported to Belgium, Italy, Spain, &c.]

492 DUPRAT & Co., *Castres* (*Tarn*)—Manufacturers. (Depôt, 1 *Rue du Grand Chantier, Paris.*)

Corks cut by machinery on a system patented in England under the name of Mr. De Boissimon. Cork-plates cut by machinery.

492A FUNSTENHOFF, EMMA, 17 *Rue de Choiseul, Paris*—Manufacturer.

Artificial flowers for the study of botany.

493 DUPRÉ, ANDRÉ GEORGE, *Arcueil* (*Seine*) Manufacturer.

Metallic capsules for corking bottles.

494 DURANTON, J. B., 11 *Rue St. Joseph, Paris*—Manufacturer.

Cotton and linen yarn fabrics for shirt-fronts. Patented in France and Great Britain.

495 DUVELLEROY, PIERRE, 17 *Passage Panorama, Paris*—Manufacturer.

Specimens of fans of various kinds, carved and painted, &c. One of these ornamental fans is exhibited in the cut on page 1203.

496 D'ENFERT BROTHERS, *Plaine d'Ivry, Deux Moulins, near Paris* (*Seine*)—Manufacturers.

Various sorts of gelatine. Applicable to the arts, to manufacturing flowers, to the preparation of fabrics, lithography, &c., as well as to various cooking purposes.

497 ERRARD, PIERRE, 13 & 21 *Rue du Mail, Paris*—Manufacturers.

Pianofortes of various patterns. Carved pianoforte. This instrument is represented in the annexed Plate, 249.

Harp, from an invention patented in England.

498 ERNOUX, C.H., 9 *Passage Ste.Avoye, Paris*—Hatter.

Fancy felt-hats, with and without ornaments, manufactured by a new process.

499 ESPRIT & NOYÉ, F., 42 *Quai de Retz, Lyon* (*Rhône*)—Manufacturers.

Drawing of a regulator for hosiery manufacture.

Gloves and stockings, manufactured by means of this regulator.

502 FAUQUIER, LOUIS FELIX, 7 *Rue Bourg-Labbé, Paris*—Manufacturer.

Toilet brushes of all kinds for exportation to America.

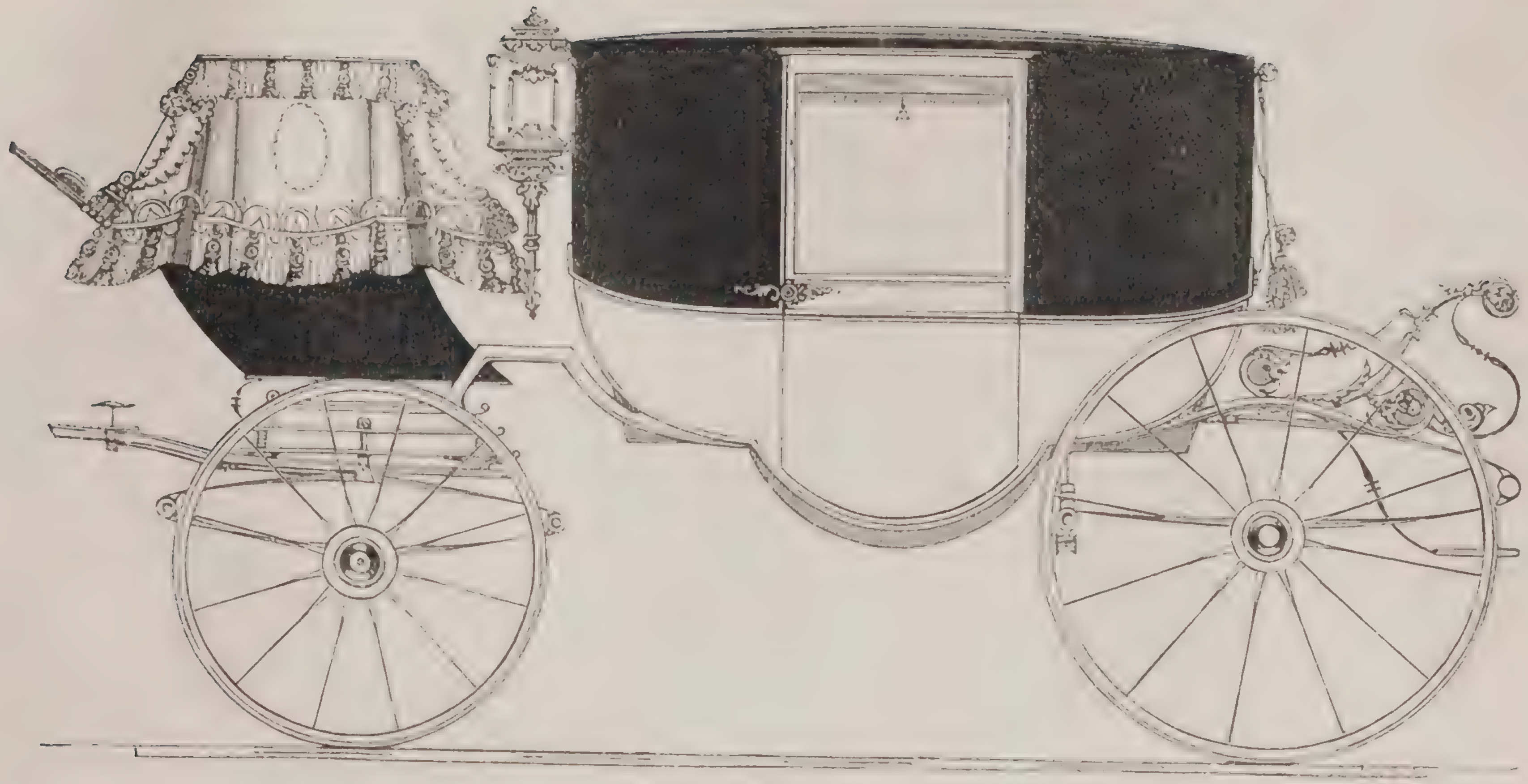
Glass windows of inlaid rosewood, composition pearl, and tortoiseshell.

503 FÉLIX, J., 64 *Rue Rambuteau, Paris*—Manufacturer.

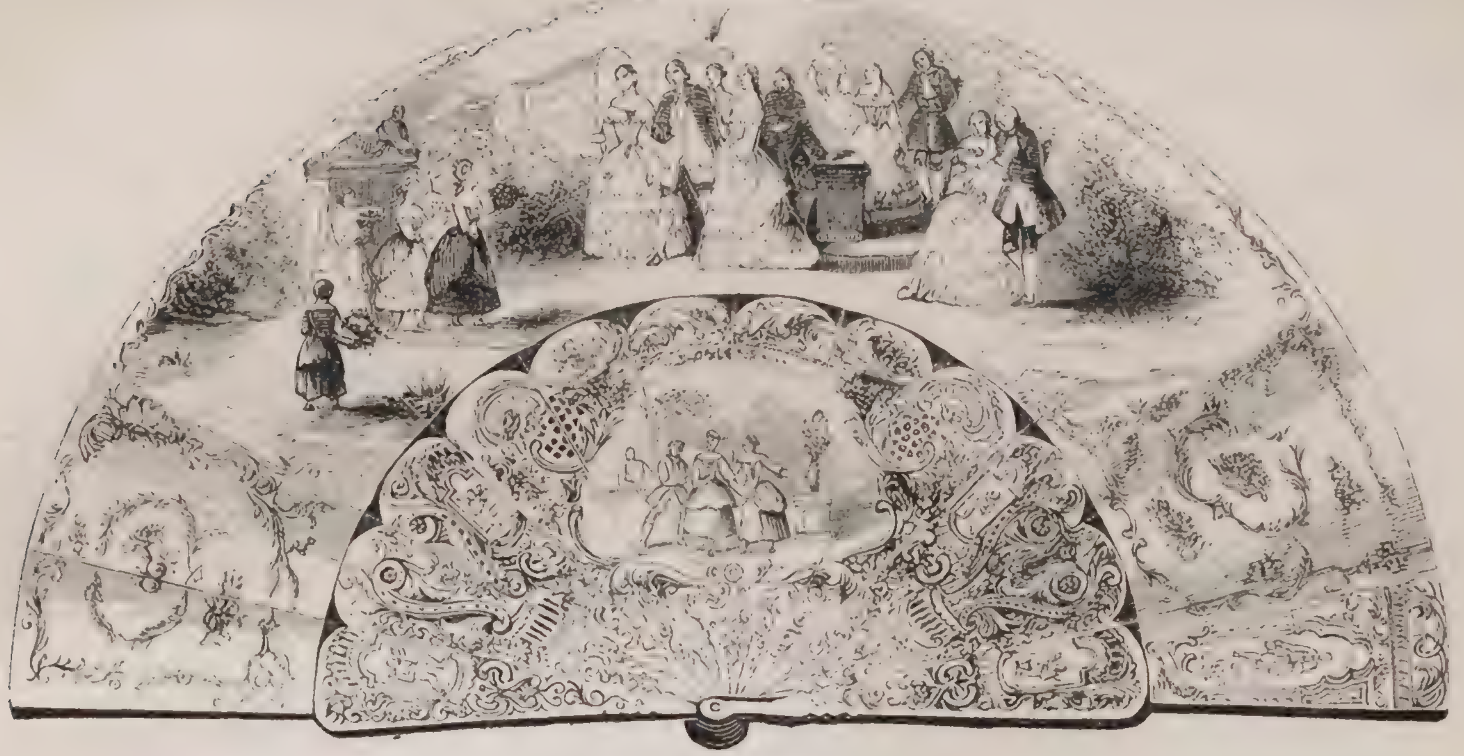
Flat purses; cigar, blotting, and surgical-instrument cases, and embroidery, mounted in velvet and morocco.

504 FERON, J. F., 29 *Rue de Clichy, Paris*—Manufacturer.

Bannisters, with ornamented handrails.



Dunaime's "Town Berline."



Duvelleroy's Ornamental Fan.

505 **Fery, Anatole**, *La Teste, near Bordeaux* (*Gironde*)—Agriculturist.

Samples of raw and shelled rice, from the fourth crop of rice in the lands of Gascony, produced in 1850.

506 **Fischer Brothers**, *St. Marie-aux-Mines* (*Haut-Rhin*)—Manufacturers.

Fabrics in cotton, wool, and dyed silk for dresses, cravats, and Madras fancy articles.

507 **Flaud, Henri Pierre**, 27 *Rue Jean Goujon, Paris*—Inventor and Engineer.

Steam-engine of 25 horse-power, weighing 539 lbs.; remarkable for the smallness of its size, and adapted for all purposes requiring great rapidity. Fire-engine with apparatus, as adopted by the municipality of Paris.

508 **Fondet**, sen., 11 *Boulevard Poissonnière, Paris*—Architect.

Apparatus for curing smoking chimneys. Warming apparatus; prismatic warming pipes, which economise fuel, diffuse heat and ventilation, and preserve health.

509 **Fonteneau, Félix**, 8 *Rue Dugommier, Nantes* (*Seine-Inférieure*)—Inventor.

Percussion-gun, with an improved under-box and a safety hammer.

510 **Fortier, Beaulieu**, *Rue de la Lunette, Bercy*—Manufacturer.

Specimens of skins, hides, and leather.

511 **Francois-Gregoire**, *Haubourdin les Lille* (*Nord*)—Manufacturer.

Spirit of molasses from gin, vinegar, absynth, corn, and potash.

512 **Fray, Martial**, 22 *Rue Pastourelle, Paris*—Silversmith.

A complete table service, including wash-stand, taper-stand, inkstand, and other articles of silversmith's work.

513 **Fumet, Claude Félix**, 25 *Rue du Helder, Paris*—Inventor and Manufacturer.

Apparatus for making ice-sherbets and artificial ice, at all temperatures, without employing natural ice; useful in medical practice and for domestic purposes.

The apparatus for making rough ice is composed of two principal parts—the pail to receive the freezing mixture, and the inner vessel inclosing a conical tube open at the bottom. The liquid to be converted into ice is turned into the inner vessel, and the freezing mixture into the pail. If the mixture is fresh, the liquid is frozen in about fifteen minutes; but, if that which has been used in a preceding operation is employed, it will take from thirty to forty minutes.

The apparatus for making ices, called "Sabotière," is composed of two principal parts—a pail, which is widened towards the top, and covered; and the sabotière, or inner vessel, slightly conical, which is inserted in the pail, on which it rests by a projecting border or rim; this vessel is closed at the bottom like a cup, and open at the top to admit the creams to be iced. It is closed at top by a cover furnished with a handle, and a hook which fastens it to the rim of the vessel. This apparatus works as follows:—The freezing mixture, composed of sulphate of soda, pulverized, and of chloro-hydric acid, is turned into the pail, and the creams to be iced into the inner vessel; its cover is then fastened by the hook, and the whole of the vessel is then put into the pail among the freezing liquid; then taking the whole by the handle of the sabotière, an alternate motion of rotation is given to it for about a quarter of an hour, when the cream is sufficiently frozen. The cover is opened from time to time, and the mixture well stirred with a spoon adapted for the purpose. The freezing mixture must be renewed every fifteen or twenty minutes. There is a measure for the freezing mixture, which contains two parts of salt and one of acid. The pail is furnished with a handle, and is surrounded with thick woollen cloth, to exclude the effect of the outward air.

515 **Galimard, Eugène**, *Vals* (*Ardèche*).—Silk Throwster.

Samples of raw and thrown silk of various kinds.

516 **Gannery, Victor**, *St. Nicolas, d'Alihermont*, (*Seine-Inférieure*)—Producer.

An astronomical clock.

517 **Gaymard & Gerault**, 10 *Rue Montmorency, Paris*—Manufacturer.

Account-books for offices, counting-houses, &c., lithographed and ruled.

517a **Gérente**, 13 *Quai d'Anjou, Paris*—Manufacturer.

Specimens of stained glass.

519 **Gevelot & Lemaire**, 30 *Notre Dame des Victoires, Paris*—Manufacturer.

Caps for percussion guns.

520 **Gervais**, 3 *Rue des Fossés St. Jacques, Paris*—Manufacturer.

Patent copper boiler with a copper grate. Pipes with double effect, and ventilation with returning columns.

521 **Gillet, Auguste**, *Knevel* (*Morbihan*)—Manufacturer.

Sardines preserved in oil.

522 **Gillot**, —, 8 & 10 *Rue du Chevalier du Guet, Paris*—Lithographic Printer.

Three frames containing typographical impressions, with their stereotypes. Patented in France and Belgium.

524 **Goffinet, Salle, Jean Baptiste, Touss, & Co.**, *Reims* (*Marne*)—Wool-spinner.

Carded wool-spinning:—Hair; wool and cotton; all wool; woollen and cashmere,—of various colours.

525 **Gourdin**, —, *Mayet* (*Sarthe*)—Manufacturer.

A clock, striking the quarters; adapted for country mansions or palaces.

526 **Grossot & Co.**, *Place du Collège, Lyon* (*Rhône*)—Manufacturers.

White damask thread table-napkins, or cloths. Complete table-services.

527 **Grey, M.**, *Dijon Côte-d'Or*—Manufacturer.

Various samples of mustard.

529 **Grosse Brothers**, 29 *Quai Napoleon, Paris*—Manufacturers.

Areometers, for liquids in a dense or diluted state.
Chemical utensils, such as crucibles, capsules, spoons, &c.

530 **Groult**, —, jun., 16 *Rue St. Apolline, Paris*—Manufacturer.

Specimens of pastes and flours for soups.

531 **Groult & Co.**, 7 *and* 9 *Rue Frépillon, Paris*—Manufacturers.

Various kinds of copper tubes.

532 **Gueuvin-Bouchon, & Co.**, *Laferté sous Jouarre,* (*Oise*)—Manufacturers.

Specimens of millstones, whole and in pieces.

533 **Guerot, A.**, *Elbeuf* (*Seine-Inférieure*)—Dyer.

Samples of wool dyed in various colours, and used in the manufacture of broad-cloths.

534 **Guillot, J. J. A.**, 17 *Rue de Bouloy, Paris*—Manufacturer.

Shoes, &c., and tanned leather.

536 **Henry, Claude**, 21 *Côte St. Sébastien, Lyon,* (*Rhône*)—Machine-maker.

Steel combs, for weaving silk and cotton stuffs.

537 **Herme**, —, *Crest* (*Drôme*)—Silk Throwster.

Samples of raw and thrown silk.

538 **Herrenschmidt, Gustave François**, *Strasbourg*—Manufacturer.

Boot-legs. White and japanned calf leather.
Calf-skins. Sewn straps.

539 **Heyler, Mdlle. Mary**, 3 *Rue de l'Echiquièr, Paris*—Manufacturer.

Various mittens and gloves.

540 **Hildebrand, A.**, 202 *Rue St. Martin, Paris*—Manufacturer.

Chimes of bells for churches and belfreys. Tuning-forks for orchestras.

541 **Huck**, —, 31 *Rue Corbeau, Paris*—Manufacturer.

A complete apparatus for grinding alimentary substances, in wrought or cast iron, or brass.

542 **Husson, F. C.**, 13 *Quai de la Tournelle, Paris*—Manufacturer and Inventor.

Patent transparent cloths for the reproduction of drawings, maps, and plans.

543 **Imlin, Frederic**, *Strasbourg* (*Bas-Rhin*)—Veterinary Surgeon.

Plaster casts modelled from nature, representing club-feet of horses both before and after the operation.

544 **National Printing Office**, *Paris.*

A volume exhibited as a specimen of printing, and three geographical maps. Copies of ancient missals and manuscripts.

545 **Jacquet, Robillard**, *Arras* (*Pas de Calais*)—Manufacturer.

Double sowing machine, adapted to sow small beans, wheat, barley, oats, rye, red beets, and corn in general; it can be adapted to any plough or sowing engine, and is exhibited for its simplicity and cheapness, and is easily repaired.

This instrument consists of a cast-iron disc, containing eight movable distributors, which are made, by means of a key, to take from one to twenty-five grains, as required; these distributors turn round in a small wooden frame, surmounted with a hopper, capable of containing from 12 to 15 pints of corn. A board, adapted to the hopper, permits the distribution of either a large or small quantity of seeds.

The whole apparatus is laid upon the back part of the binot (or plough); a wheel, adapted to the back of the plough relieves the draft of the horses, and transmits movement to the distributor. A glazed slip board, which may be shut while it rains, allows the sower constantly to see the process of sowing, so that he cannot leave a blank.

546 **Jacquin, Joseph Jules**, *Troyes* (*Aube*)—Manufacturer.

Patent circular looms. Samples of cotton, and woollen and cotton fabrics.

547 **Jacquot**, —, *Nancy* (*Meurthe*).

Violins, tenors, and violoncello.

548 **Jamin**, —, 71 *Rue St. Martin, Paris*—Manufacturer. (Agent, M. de **Fontaine Moreau**, 4 *South Street, Finsbury.*)

Four large mirrors; opera-glasses, microscopes, &c.

549 **Jerome Brothers**, *Amiens* (*Somme*)—Machine-makers.

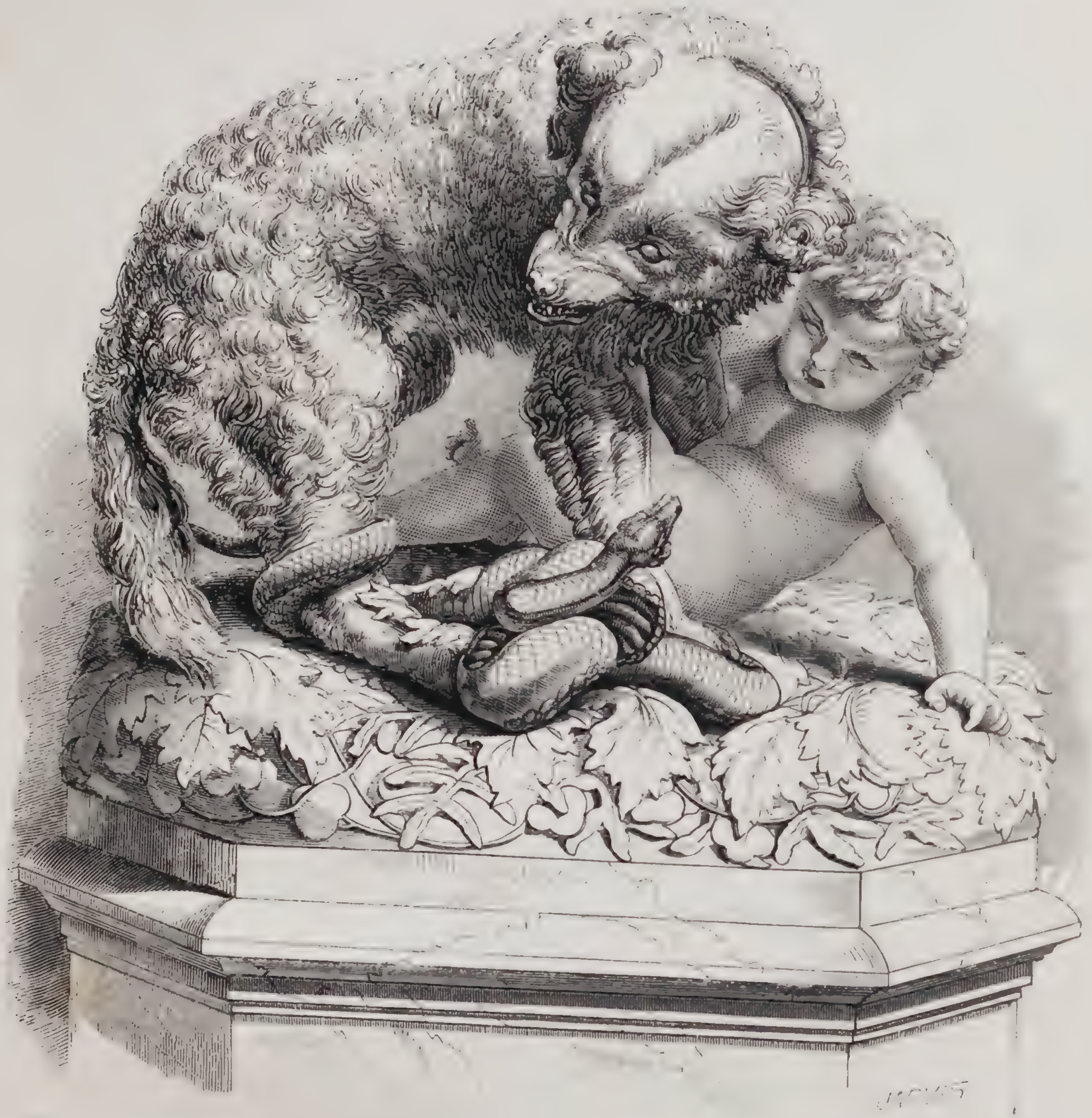
A machine for winnowing buck-wheat.

550 **Gourdan, A.**, 3 *Rue Neuve, St. Eustache, Paris*—Manufacturer.

Brocaded worsted shawls and Cashmere shawls.

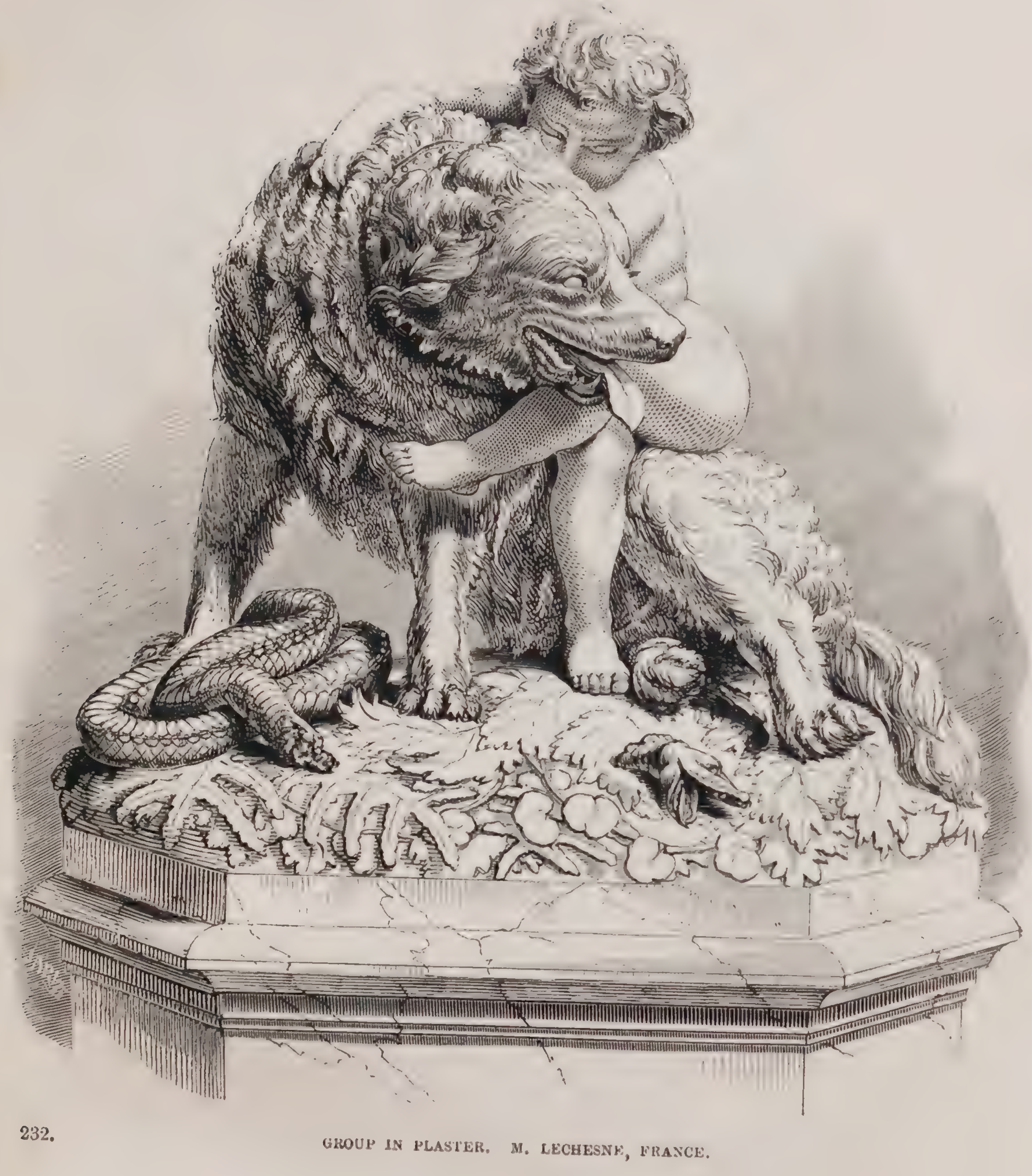
551 **Josselin, Jean Julien**, 37 *Rue Louis-le-Grand*—Staymaker.

Stays of every kind. Improved mechanism for remedying defects of every kind in the figure.



233.

GROUP IN PLASTER. M. LECHESNE, FRANCE.



232.

GROUP IN PLASTER. M. LECHESNE, FRANCE.

552 JOUBERT-BONNAIRE, & Co., *Angers* (*Maine and Loire*) — Manufacturers. (Agent J. S. DE GAETAN, 3 *Bow Lane, Cheapside.*)

Raw and combed hemp and flax. Sail-cloths. Tent-cloths. Fireman's pail-cloths. White pantaloon cloths.

553 JOURNIAC, JEAN, 44 *Rue du Commerce, Grenelle,* (*Seine*)—Cork Manufacturer.

Mechanical corks, on a new system of corking.

Cylindrical capsules for seltzer-water. By the use of these capsules, the bottles may be wholly or partially emptied without any of the gas escaping, and the capsule is unscrewed for the bottle to be cleaned.

554 KESSEL, JEAN, 14 *Rue Bonafoux, Bordeaux,* (*Gironde*)—Cabinet-maker.

Mechanical bed, on a new system. Patented in England.

555 KUHLMANN BROTHERS, *Lille* (*Nord*)—Manufacturers.

Samples of twenty different chemical products.

556 LABBAYE, —, 17 *Rue du Caire, Paris*—Manufacturer.

Specimens of brass musical instruments.

557 LACOMBE, LÉON, *Calamane, Canton de Catus,* (*Lot*)—Manufacturer.

Specimens of artificial flowers in enamel.

558 LE MERCIER, —, *Rue de Seine, Paris*—Producer.

Specimens of drawings.

559 LAILLER, EDOUARD-HUBERD, *L'Hotellerie* (*Calvados*)—Manufacturer.

Specimens of heckled flax.

560 LAPORTE & DURAND, *Toulouse* (*Haute-Garonne*) Producers.

Bread and biscuits preserved since 1845.

561 LAPIERRE & SON, *Vallerangue* (*Gard*)—Producers.

Specimens of raw silk.

562 LATACHE DE NEUVILLETTE, PIERRE ADRIEN, *Ferme de Valbruant*—Agriculturist.

Samples and fleeces of merino wool.

563 LAURENT, Mme. PAULINE, 44 *Rue Richer, Paris, and* Mr. MOREL'S *New Burlington Street, Regent Street*—Painter on Porcelain and Enamel.

Enamel paintings:—The Venus Anadyomein, after M. Ingres. The Belle Jardiner, and the Virgin of the Veil, after Raphael, belonging to the Sèvres manufactory.

Porcelain painting: — The Reapers, after Leopold Robert, belonging to Mr. Laurent.

564 LAURENT, FRANÇOIS, 5, *Rue Chapon, Paris*—Cabinet-maker.

Specimens of dressing-cases, portfolios, liquor cellarets, flower-stands and other articles of cabinet-work.

565 LASSON, ANTOINE, 21 *bis, Rue de Laval, Paris*—Painter.

Painted glass windows, in the style of the 13th, 15th, and 16th centuries. Painted glass window in the modern style, with historical subjects, counter-drawn cartoons, &c.

566 LANTEIN & Co., *Reims and Tinqueux* (*Marne*)—Producer.

Samples of dyed and undyed wool.

567 LAUR, JEAN ANTOINE, 4 *Rue St. Claude au Marais, Paris*—Manufacturer.

Philosophical instruments.

568 LAURY, GABRIEL, 29 *Rue Tronchet, Paris*—Manufacturer.

Calorifercs in brass and cast-iron. Grates for chimneys. Fenders. Columns of various patterns. Various objects in bronze.

569 LEBERT, LOUIS, *Bailleau-sous-Gallardon* (*Eure and Loire*)—Manufacturer.

Ploughs, models of ploughs, and a machine for thrashing clover seed.

570 LEBLÉIS, HYACINTHE, *Pont-L'Abbé* (*Finistère*)—Agriculturist.

Specimens of wheat-flour of various kinds. Potato-flour.

571 LEBRUN, ALEXANDRE, 3 *Rue Chapon, Paris*—Manufacturer.

Various specimens, models of telescopes and microscopes, and a coffee-pot of the exhibitor's own invention.

572 LEBRUN, JOS. ALEX., Jun., 9 *Boulevard du Temple, Paris*—Marble-worker.

Mantelpieces for chimneys, carved in various styles.

573 LECHESNE, AUGUSTE JEAN BAPTISTE, 37 and 30 *Rue Fontaine St. Georges, Paris*—Producer.

The Child, the Dog, and the Serpent, two groups in plaster. The first group represents a majestic Newfoundland dog attacking a serpent, a terrified child conceals himself behind his courageous defender; in the second group the dog is victorious, his paw rests on the mangled remains of the serpent, and the child with fond caresses expresses his gratitude. These groups are represented in Plates 232, 233.

The Mother, the Child, and the Eagle; group in plaster. Pear-tree carved frame.

574 LECHESNE BROTHERS, 66 *Rue des Martyrs, Paris*—Manufacturers.

Specimens of carvings: Bronze paper presses; book-case of carved oak; stone-carved fountain; various articles in carton pierre.

575 LECLERC, JULES, *Mesnil St. Fermin* (*Oise*)—Manufacturer.

A window, with stained glass for churches.

576 LECLERC BROTHERS, *Angers* (*Maine and Loire*)—Manufacturers. (Agent J. S. DE GAETAN, 3 *Bow Lane, Cheapside.*)

Hemp and flax, raw and heckled. Hemp and flax round and flat ropes.

577 LEFÈVRE, ANTOINE PROSPER, 4 *Rue Jean Jaques Rousseau, Paris*—Manufacturer.

Marine and pocket chronometers. Watches, with cylinders and fusees. Various springs for watch and clock making.

578 LEFÉBURE, JOS. PRER., 14 *Rue du Paradis Poissonnière, Paris, and at* 27 *Cranbourn Street, Leicester Square, London*—Manufacturer.

Ladies' and gentlemen's screw shoes. A patented process both in France and in England.

579 LEFEBVRE BROTHERS, *Warguenel* (*Nord*)—Manufacturer.

Various samples of alcohol and unrefined potash.

580 LEFEBVRE, T., & Co., *Moulins, Lille* (*Nord*)—Manufacturers.

Lumps of ceruse; powdered ceruse.

581 LEFÈVRE, sen., 53 *Nantes sur-la-Fosse* (*Loire-Inférieure*)—Manufacturer.

White of reverberated zinc; oxide of zinc.

582 **Lefrançois, —**, 302 *Rue St. Denis, Passage Basfour, Paris*—Manufacturer.

Metallic match and tinder boxes.

583 **Légal, Réné**, *Chateaubriand (Loire-Inférieure)*—Producer.

Specimens of calf leather.

584 **Legrand, Marcellin**, 99 *Rue de Cherche, Midi, Paris*—Producer.

Specimens of printing type; specimens of Chinese impressions; composition plates of embossed types for printing for the use of the blind.

585 **Le Gray, Gustave**, *Chemin de Ronde de la Barrière de Clichy, Paris*—Producer.

Specimens of photography.

586 **Lemaire, Philippe Henri**, 3 *Rue Jean-Robert, Paris*—Sculptor.

Specimens of sculpture, a statue and a head.

587 **Lemercier, R. J.**, 57 *Rue de Seine, Paris*—Producer.

Frames, with engravings.

588 **Lenormand, A.**, *Vire, Calvados*—Manufacturer.

Various descriptions of woollen cloth, satin, beaver, &c.

589 **Léonard, Charles**, 55 *Boulevard St. Martin, Paris*—Manufacturer.

Plain and ornamented iron bedsteads. These bedsteads exhibit several improved features of general construction, and are made of different kinds for public or private establishments. Some of them are represented in the adjoining Plate 31.

590 **Le Paisant, L.**, *Pont L'Abbé (Finistère)*—Agriculturist.

Specimens of potato flour and gluten.

591 **Lervilles, Joseph**, 21 *Rue St. André, Lille (Nord)*—Manufacturer.

Ground chicory, called powdered Mocha; Mocha in half beans; powdered Mocha.

592 **Lesecq, Henri**, 35 *Quai Bourbon, Paris*—Designer.

Two frames, with specimens of photography.

593 **Lesourd, Delisle Antoine**, *Angers (Maine and Loire)*—Inventor.

The model of a vat for fermenting wines in a closed vessel.

594 **Levraud, P. J.**, *Nantes and Belle-Isle en Mer*—Producer.

Preserved food:—Soups, meats, truffled pasties, sardines, &c.

595 **Lévy Brothers**, 76 *Rue des Fossés du Temple, Paris*—Manufacturers.

Large vase to support lights, with painting on porcelain, after Boucher, mounted with gilt bronze figures.

Timepiece, with "The Seasons," in bronze and porcelain, and painting on soft china or tender porcelain, after Boucher.

Pandora box, in gilt and plated bronze, with medallions in painted porcelain.

Toilet box, in gilt bronze, ornamented with plated figures, and painting, after Watteau.

Timepiece, with the "Cunning child," in bronze, and pastoral painting in porcelain.

Cascade timepiece, in gilt bronze, with painting on porcelain, "Virgin with a Child," after Solario.

Timepiece, in carved bronze, on porcelain, with painting in blue torquoise.

Large chandelier for 24 lights, with painting on porcelain—flowers and cupids.

Pair of vases (Louis XVI.), Sèvres blue china, mounted on gilt bronze, with bunches of flowers.

Clock, "The Reading Women," in gilt bronze, with dark blue faces, and cameos painted on porcelain.

Timepiece (Louis XIV.), in bronze and porcelain, "Virgin and Child," after Raphael.

Timepiece, "Two Swans," in bronze and porcelain, painting after Boucher.

Timepiece (style of the Regency), in bronze and porcelain.

Timepiece, "Two Women and Vase" (style Louis XVI.), with flowers and birds.

Large pavilion timepiece, in bronze and porcelain (style Louis XVI.), with revolving dial, and painting, after Boucher and Greuse.

Large lamp, dark blue porcelain, mounted in gilt bronze, with portraits of celebrated women, painted on Sèvres porcelain.

Large vases, in tender porcelain, with mythological subjects, after Raphael and Boucher; flowers and fruits; mounted in gilt bronze, with children supporting the handles of the vases.

Pair of candelabra, "Summer and Winter," with 10 lights, in bronze and porcelain, with paintings after Boucher.

Timepiece, "Three Birds," in bronze and porcelain, with a pastoral subject, and medallions after Greuze.

Large Dauphine inkstand, with bronze and porcelain decorations.

Timepiece, with figures of "Peace and War," and portrait of Louis XIV., and infantry, painted on porcelain.

Cup, with porcelain mounting in gilt bronze, and painting—a vine, flowers, fruits, and cupids.

Pair of Sèvres china cups, with mounting in gilt bronze, and painting after Boucher.

Victory timepiece, in the style of Louis XVI., in bronze and porcelain, with painting after Watteau.

Two cups in modern Sèvres porcelain, with dark blue enamel decoration, mounted in gold bronze

A large porcelain flower-pot, mounted in gilt bronze, with painting after Boucher—"Silvia and Aminta."

Large table chandelier, with 16 lights, mounted in gilt bronze, with flowers and fruit.

Small table timepiece, with medallions in painted porcelain.

Pair of candlesticks (renaissance style), tender porcelain mounted in gilt bronze.

Timepiece, "Pandora," with painted porcelain faces.

Commercial timepiece in gilt bronze, tender porcelain, with painting of Cupids, flowers, and trophies.

596 **Machet-Marotte**, *Reims (Marne)*—Manufacturer.

Zephyr cloths; superfine kerseymeres; satined merinos; smooth and double-milled valencias; cloaks; shawls; and sultana cloths.

597 **Maillot, Eugene**, 28 *Rue Grenier St. Lazare, Paris*—Manufacturer.

Moulded, carved, and engraved smelling-bottles, with silver mountings.

598 **Maistre Brothers**, *Villeneuvette, near Clermont (Herault)*—Manufacturers.

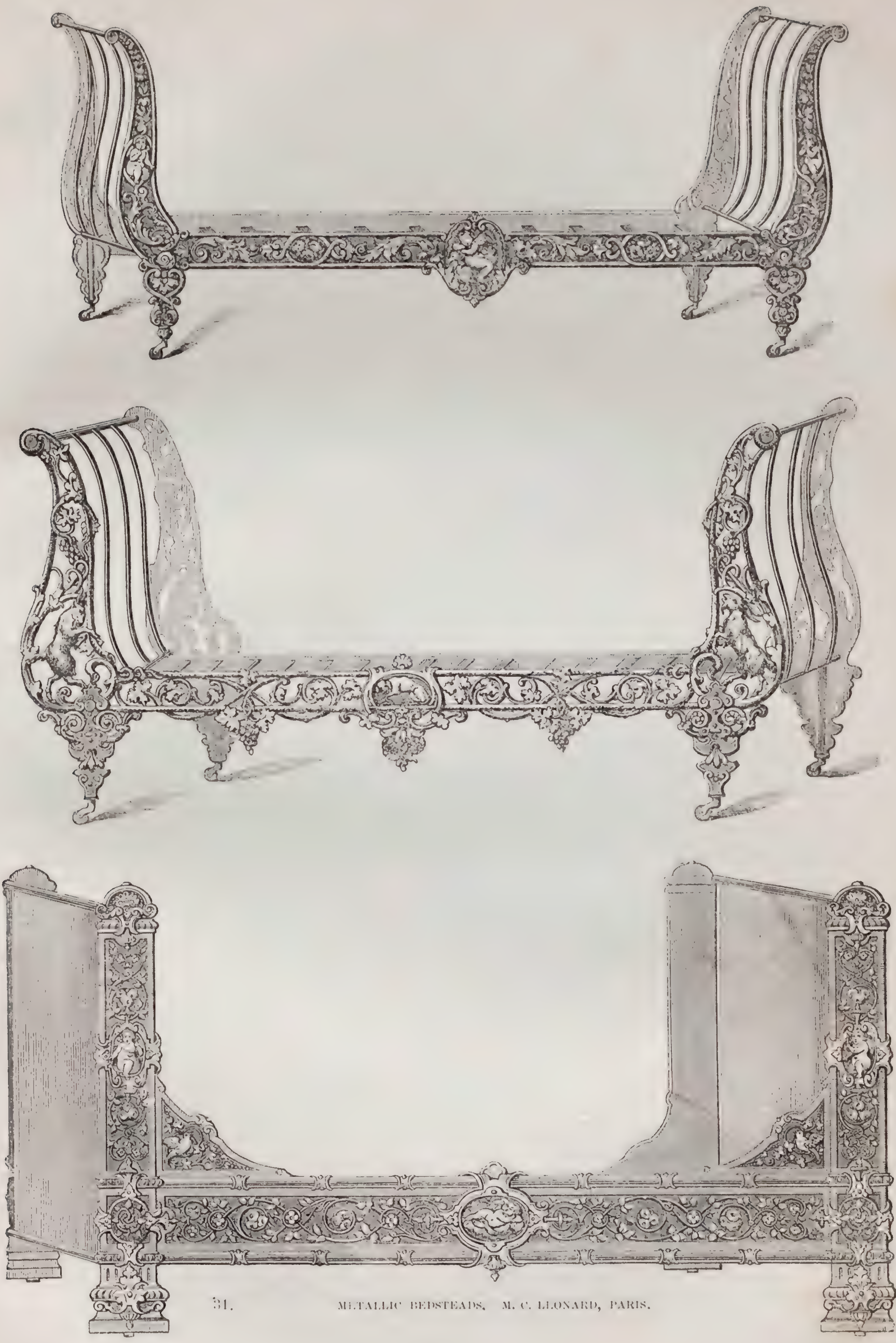
A piece of maddered red cloth, and a piece of dark blue cloth for army clothing.

599 **Mallet Brothers**, *Calais (Pas de Calais)*—Manufacturers.

Net-work imitation of Valenciennes, made by machinery; model of a lace machine.

600 **Marguerie, —**, 23 *Rue Ménilmontant Paris*—Manufacturer.

Painted and stained paper for hangings.



31. METALLIC BEDSTEADS. M. C. LEONARD, PARIS.

601 **Montandon Brothers**, *Rue des Lions, St. Paul, Paris*, and *Rambouillet* (*Seine and Oise*)—Manufacturers.

Clock-springs and watch-springs, manufactured by the exhibitors. The manufacture of these articles has risen from a few thousands yearly to 60,000 dozen watch-springs; and from a few hundreds to 60,000 pairs of clock-springs. The establishment of the exhibitors employs a steam-engine, cutting-out machines, machines for tempering and polishing, calibre machines, and machines for rounding or turning springs of all sizes.

602 **Mantois, Mlle.**, *Rue du Pot de Fer, Paris*—Producer.

An anatomical picture.

603 **Maquet, Hermel**, *Réthel* (*Ardennes*)—Manufacturer.

Pieces of unbleached and dyed merinos.

604 **Maquet, Aug.**, *Réthel* (*Ardennes*)—Manufacturer.

Pieces of unbleached and dyed merino fabrics.

605 **Marcelle, Sautret**, *Béthenville* (*Marne*)—Manufacturer.

Specimens of unbleached and dyed merino fabrics, fine and strong.

606 **Marcelin, —**, 40 *Rue Basse du Rempart, Paris*—Manufacturer.

Mosaic table, carved; work-table; book-case; mosaic flooring; mosaic backgammon board; vase mounted with sphere. These wood mosaics are executed upon the principles of geometrical combinations, and are applicable to joinery and cabinet work of all kinds, flooring, wainscotting, &c.

607 **Marchand, Jn. Bte.**, 57 *Rue Richelieu, Paris*—Manufacturer.

Gilt bronze candelabras, statuettes, chimney ornaments, and other articles in bronze; exhibited for design and workmanship. Clocks, with marble pedestals. Weapons of various kinds with ornamental hilts: the accompanying Plates 184, 228, represent some of these.

608 **Marga, E.**, 1 *Boulevard des Filles du Calvaire, Paris*—Manufacturer.

Three chimney pieces carved in white marble.

609 **Marion, Aug.**, 14 *Cité Bergère, Paris*—Manufacturer.

Fancy stationery of every description, note paper, envelopes, &c. Machine for folding envelopes.

610 **Martens, Frederic**, 6 *Rue du Pot de Fer, Paris*—Producer.

Three frames with daguerreotypes.

611 **Marti, S.**, 9 *Rue d'Orleans, Marais, Paris*—Manufacturer.

Various kinds of clock machinery.

612 **Martin & Casimir**, *Tarare* (*Rhône*), and *Metz* (*Moselle*). *Depôts in Lyons and Paris*—Manufacturers.

Silk plush for gentlemen's hats.

613 **Martin, Chs. Aug.**, 18 *Rue Mauconseil, Paris*—Trimming Maker.

Lace, silk buttons, velvet trimmings, &c.

614 **Martin, Ovide, & Very Brothers**, *Sommevoire* (*Haute Marne*), and *at* 74 *Quai de la Megisserie, Paris*—Manufacturers.

Internal and external cast-iron house ornaments.

615 **Massue, Louis Joseph**, 3 *Rue Aumaire, Paris*—Manufacturer.

Ivory combs of every description.

616 **Matagrin, Stolz, & Co.**, *Tarare* (*Rhône*). *Depôt*, 13 *Rue de Clery, Paris*—Manufacturers.

White and coloured tarlatans. Various muslins.

617 **Mathieu, Danloy, Widow**, *Réthel* (*Ardennes*)—Manufacturer.

Samples of iron and steel buckles.

618 **Mathieu, Louis**, 7 *Rue des Poitevins, Paris*—Manufacturer.

Amputating instruments. Orthopedic apparatus of every description. A variety of surgical instruments for obstretical and other operations. Speculums. tonsiloome. Artificial legs and arms; a new method of adapting the artificial leg to the stump. New cupping glasses and mechanical leeches. Improvements in fire-arms, combining a new system of priming, and of connecting the barrel with the breech in fire-arms loaded at the breech.

619 **Mauban & Journet, Vincent**, Managers of the Joint Stock Paper Mill Company of Souche (*Vosges*). *Depôt*, 5 *Rue du Pont de Lodi, Paris*—Producers.

Papers of various kinds and sizes. Imitation of China paper.

620 **Maucomble, —**, 26 *Rue de Grammont, Paris*—Producer.

Five coloured portraits in daguerreotype.

621 **Maurel, Jayet, & Co.**, 43 *Avenue de l'Observatoire, Paris*—Inventors.

Calculating-machines. Patented in England.

622 **Mayer Brothers**, 48 *Rue Vivienne, Paris*—Manufacturers.

A complete daguerreotype apparatus, with a new and improved system of dark-chamber.

A patent multiplicator, by the use of which an unlimited number of portraits may be had successively upon the same plate, and with a single sitting.

A patent regulating lamp, designed to obtain and to keep an equal volume of alcoholic flame under the mercury box.

Three frames, containing specimens of photographic portraits upon paper, and daguerreotype plates painted with colours, invented and prepared by the exhibitors.

623 **Masse, V.**, 5 *Faubourg St. Honoré, Paris*, and 3 *Goldsmith Street, Gough Square, Fleet Street*—Producer.

Plans in relievo of all kinds of private landed property, country seats, parks, gardens and tenements.

624 **Mayer, Madame T.**, 22 *Rue de la Vieille Monnaie, Paris*—Manufacturer.

Fancy papers, specimens of engraving and lithography, fans, pasteboard, and sweetmeat envelopes.

625 **Naze, Son, & Co.**, 23 *Rue du Sentier, Paris*—Designers.

Designs for printing shawls, furniture, silk handkerchiefs, and dresses.

626 **Mazarin, Jean Georges**, 83 *Passage du Havre, Paris*—Inventor. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

An imitation of polished steel and oxidized silver. A patented invention in France and England, as a substitute for gilding on furniture and room ornaments. This process effects a saving of from 30 to 50 per cent. on the ordinary method of gilding.

627 **Méhu, J. M. François**, Engineer of the Mines of Anzin, *Nord*—Producer.

Apparatus for the extraction of ores, and the free and safe ingress and egress of miners; patented in France, England, and Belgium, and in use at the Anzin mines, near Valenciennes.

Apparatus to supersede the use of ropes in the extraction of the ore, with six little waggons. The apparatus is constructed on the scale of a fifth of its natural size.

628 **Masson, Victor**, 1 *Place de l'Ecole de Médecine, Paris*—Publisher.

Scientific works on natural history.

629 **Meillet & Pichot**, *Poitiers* (*Vienne*)—Manufacturers.

A description of paper precluding the possibility of forgery. Postage stamps: being a novel combination of inks, for the laying on of different impressions; warranted to preclude counterfeits.

[Various means have been from time to time suggested for the prevention of forgery, but frequently without success. Of late lithography has been employed for this purpose. By the same art, the engravings of old masters have been so reproduced, as to cause the copy, in many instances, to be mistaken for the original. It is contended, that if this art can be so employed as to deceive even the most practised eye with regard to such old engravings and old impressions from them, its capacity to reproduce designs and impressions of far more recent date is consequently extremely probable. The present is an attempt to render this impossible, by the combination of different printing inks, the superposition of which renders impossible those means of reproduction so easily adopted by the lithographic processes; and the resulting impression of the combination of these different inks supplies to every person employed in the fiscal departments a test that might readily enable him to detect, instantly, whether a given filigreed paper, or stamp, were falsified or genuine.

The postage-stamp impressions are printed in printing inks of various colours, corresponding to certain tints previously adapted for various lists of prices, applicable to letters and parcels, according to their respective weight, value, &c.

A counterfeit impression of the post-office stamp has not been produced, in consequence of the fear that in the event of any of the proofs being lost, they might be improperly made use of; therefore, an approximate imitation only has been executed.

The effigy in this stamp is printed in a peculiar ink, which, touched with nitric acid, diluted in a quantity of water two-thirds of its own volume, becomes of a greenish-blue colour in some little time after this application. The watered filigree ornament, in another part of the stamp, is printed in ink of another kind, and which, on being touched with the same chemical agent, instantly changes its colour, and becomes of a pale rose hue. This result would enable the clerk of the post-office, prior to the despatch of the letter thus treated, to determine, at once, whether the stamp was forged or genuine. The exhibitors, considering that it might, perhaps, be preferable to adopt, instead of this test of impressions in different coloured inks, for various categories of postal duty, have prepared different descriptions of coloured papers, varying in tint and cost, according to the weight or value of the letter or packet. But the application of the inks prepared by the exhibitors (and which cannot be erased or altered by any chemical agents, or by scratching, without producing such effects as will at once detect and render palpable the attempted tampering), is not limited to postage stamps. It may be made, with equal advantage, to all papers employed in public acts and official business, to some species of commercial bills, and to other securities.]

630 **Mène, Pierre Jules**, 7 *Faubourg du Temple, Paris*—Manufacturer.

Artistic bronzes: boar hunting, stag hunting, mare and foal.

631 **Méreaux, Joseph H.**, 7 *Rue de la Jussienne, Paris*—Designer.

Designs for lace manufacturers and fancy net.

632 **Mercier, A., & Co.**, *Louviers* (*Eure*), and 74 *Faubourg Poissonnière, Paris*—Manufacturers.

Plaited card, roving card, turning-lathe, emery cylinder. A mule for spinning with 240 spindles.

633 **Mercier, Sebastian**, 31 *Boulevard Bonne Nouvelle, Paris*—Manufacturer and Pianoforte-maker to the late King of the French, and to the Queen of England, as well as the King of Sweden.

Cottage pianofortes, or piccolos with oblique strings.

634 **Merlaut, Louis J.**, *Rue des Catherinettes, Nantes*—Producer.

Specimens of curried, japanned, and yellow calf leather.

635 **Mesnier, Son, & Cartier**, *Pontoise* (*Seine and Oise*)—Engine Makers.

A portable mill on a new principle, for grinding corn and all sorts of grains, and capable of grinding hard substances. This mill may be driven by water or steam power.

636 **Mestiviers, J. M., & Hamoir**, *Valenciennes* (*Nord*)—Manufacturers.

Specimens of linen fabrics, pieces of cambric and clear lawn, manufactured from hand-spun flax grown in the North of France.

637 **Meyer, Ernest**, 2 *Rue de l'Abbaye, Paris*—Printer.

Specimens of printing in colours, in gold and silver, by a new typographical process, adapted for book covers, titles, vignettes, and ornaments; armorial bearings for works on heraldry.

638 **Meynier, —**, 1 *Rue Hauteville, Paris*—Designer.

Different designs for fabrics.

639 **Meyruéis & Son, Brothers**, *Ganges* (*Hérault*. Depôt in Paris, 18 *Rue des Mauvaises Paroles*—Manufacturer.

Silk stockings, Scotch-thread stockings, silk and worsted gloves, beaver gaiters for children.

640 **Michel, Alfred**, *Puteaux, near Paris* (*Seine*)—Manufacturer.

Bottles containing various extracts of the colouring matter of dye woods.

641 **Michelin, Theodore**, 139 *Rue Montmartre, Paris*—Manufacturer.

Specimens of silk and velvet ribbons.

642 **Milon, Marquant**, *Beine* (*Marne*)—Manufacturer.

Specimens of woollen fabrics, barège, &c.

643 Meissonnier, C., *à St. Denis* (*Seine*)—Manufacturer.

Specimens of chemical products; different species of salts; extracts of logwood.

644 Milly, De —, 52 *Rue Rochechouart, Paris*—Manufacturer.

Stearine acids and candles: specimens of a new process for converting into hard and soft soap the oily residue which results from stearic acid.

[Berzelius, in the last edition of his treatise on chemistry, says, that the application of stearic and margaric acids in the manufacture of candles, was first indicated by Gay-Lussac, but that the present exhibitor was the first who succeeded in applying it practically on a large scale. This process is now carried on on an extensive scale in this and in many other countries, and the product appears to be rapidly replacing wax and spermaceti for the better description of domestic lights.—R. E.]

645 Miroude Brothers, *Rouen* (*Seine-Inférieure*)—Card-makers.

Cards of every kind, made with machinery upon a novel principle, invented by M. A. Miroude, and patented. Filletting for cotton, silk, wool, ribs, double twill, and straight setting. Filletting for fancy roller, hemp, horse-hair, and tow sheet for cotton and wool; needle-pointed sheet, &c.

646 Miroy Brothers, *Rue d'Angoulême du Temple, Paris*—Manufacturers.

Clocks and chandeliers, representing different kings and great men of France and England; bronze statuettes. The same in imitation of bronze. A variety of lamps of an ornamental kind.

647 Molines, Leon, *St. Jean-du-Gard* — Silk Throwster. (Agents in London, Messrs. Fordati, Coxhead, & Co., 13 *Old Jewry*.)

Samples of silks, silk waste, and cocoons.

648 Mollet-Warmé Brothers, *Amiens* (*Somme*)—Manufacturers.

Fabrics in woollen and silk, for dresses, shawls, &c.

649 Molteni & Siégler, 62 *Rue Neuve St. Nicolas, Paris*—Opticians.

Optical and mathematical instruments. Model of a theodolite with concentric circles. Barometers, thermometers, areometers. Magic lanterns—dissolving views; improved daguerreotypes and pantographs of a new description. New machine for making telescope lenses.

650 Montcharmont, —, *à la Fermeté, near Nevers,* (*Nièvre*)—Producer.

Millstones from Nevers quarries, capable of grinding above 330 lbs. of wheat per hour. Applicable to all kinds of grain.

651 Montebello, Alfred Lannes de, *Château de Mareuil-sur-Ay* (*Marne*)—Inventor.

Machine for corking bottles. New patent invention. Corks with annular incisions, by means of which bottles containing effervescent liquids are more effectually closed. The object of the inventor has been to bring the expansive power of the gas itself to bear upon the cork, so that thus prepared, the outer rim of the cork acts as the stuffing of a piston, and compensates for any loss of elasticity to which the corks are liable when they have remained long in the bottles.

652 Moreau & Co., 22 *Rue d'Enghien, Paris*—Shirt-makers.

Linen and cambric shirts, with stitched and embroidered fronts.

653 Moser, —, 15 *Boulevard du Temple, Paris*—Watch and Clock Maker.

Clocks set in black marble. Travelling clocks of all descriptions.

654 Motte, Bossut, & Co., *Roubaix* (*Nord*)—Cotton-spinners.

Single and twisted cottons. A piece of cotton velvet. Specimens of a process for spinning cotton, patented in France and England.

655 Moulard, Miss, 39 *Rue Montmartre, Paris*—Trimming-maker.

Lace head-dresses, caps, tobacco-bags, and net purses. Various fancy articles in chain-stitch work.

656 Maes, —, 9 *Cour des Petites Ecuries, Paris*—Manufacturer.

White and coloured glass; optical glasses, &c.

657 Moussard, —, 58 *Allée des Veuves, Paris*—Coach-maker.

Four-wheeled carriage. Drawing of a new model of waggon. Town and travelling chariot, on a new system. Two new kinds of axle-tree, machine-steps, &c. Machines for greasing and disengaging the spokes of wheels.

658 Mullot & Son, 69 *Rue Rochechouart, Paris*—Inventors.

Sounding instruments of various kinds, newly invented.

659 Nast, Henry Jean, 22 *Place des Vosges, Paris*—Manufacturer.

Various articles of white and gilt or decorated china.

660 Nazet, Buirette, *Rheims* (*Marne*)—Manufacturer.

Stuffs for waistcoats and cloaks. Fine light cloths for dresses. Double-milled cloths and kerseymere satin for paletots. Shawls.

661 Néraudeau, Jules Alexandre, 16 *Rue des Fossés Montmartre, Paris*—Manufacturer.

Specimens of various ledgers for offices, &c.

662 Neuburger, A., 4 *Rue Vivienne, Paris*—Manufacturer and Patentee.

Omnibus lamps with moveable burner: these lamps are exceedingly simple and without mechanism, the oil rises to the wick by its own capillary attraction; the burner can be disengaged at pleasure, and taken to pieces without any tools. Convex glass lamps; night lamps, &c. Several of these lamps are represented in the cuts on the next page.

663 Nicod, V., & Son, *Annonay* (*Ardèche*)—Manufacturer.

Twisted or woven wicks for wax or stearine candles; made by improved machinery.

664 Nicolas, Paul, *Thann* (*Haut-Rhin*)—Inventor and Proprietor.

Machine called Pauline, for engraving the rolling-presses used in printing fabrics. This machine is exhibited for novelty of construction. By its application the roller can be cut simultaneously with four, six, eight, nine, or ten gravers, and proportionably less time will be employed in the production of a design than by the common method, in which a single graver is used.

Besides the great economy of time and the superiority of workmanship, the designs produced by the "Pauline" are more perfect than those produced by aquafortis, or made with a hammer. There is besides an improvement in the colour, and appearance of the whole.

The great advantage which this engine presents to the manufacturer is, that of enabling him to increase the number of his designs, and of diversifying them to a great extent.

Fig. 1.

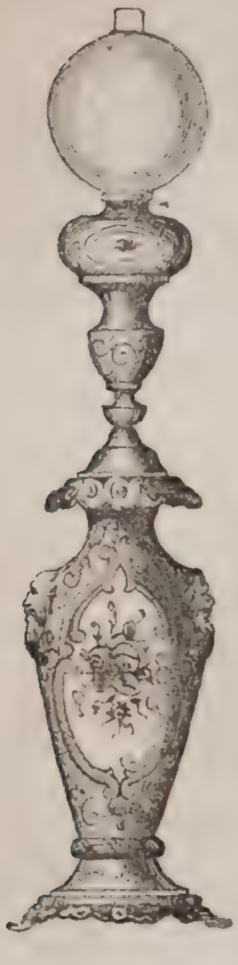


Fig. 2.

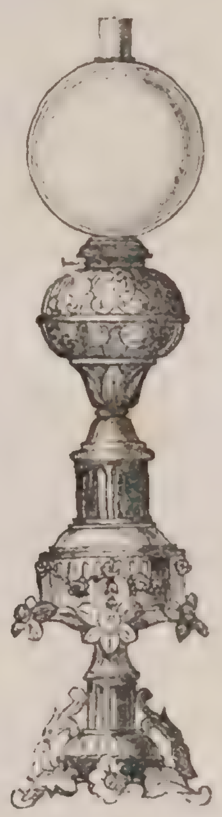


Fig. 3.

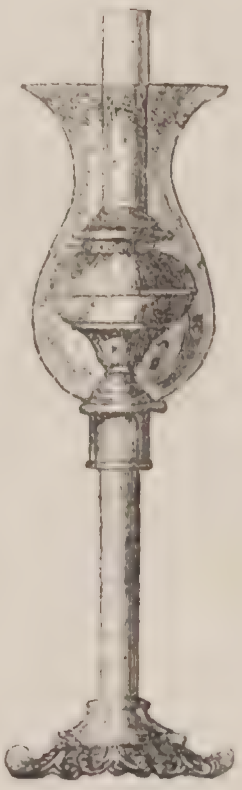


Fig. 4.

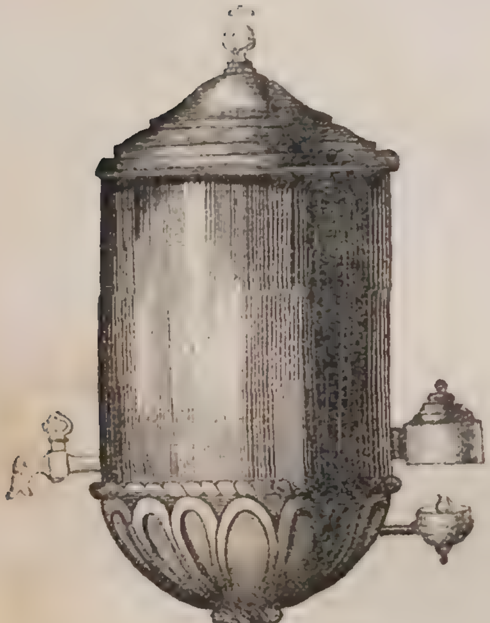


Fig. 5.

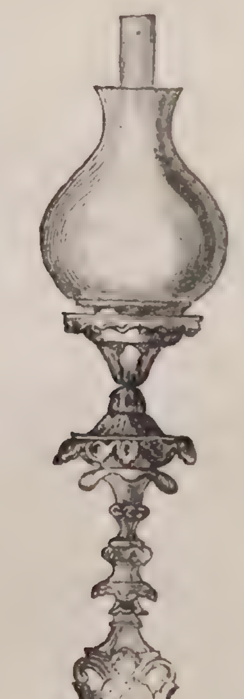
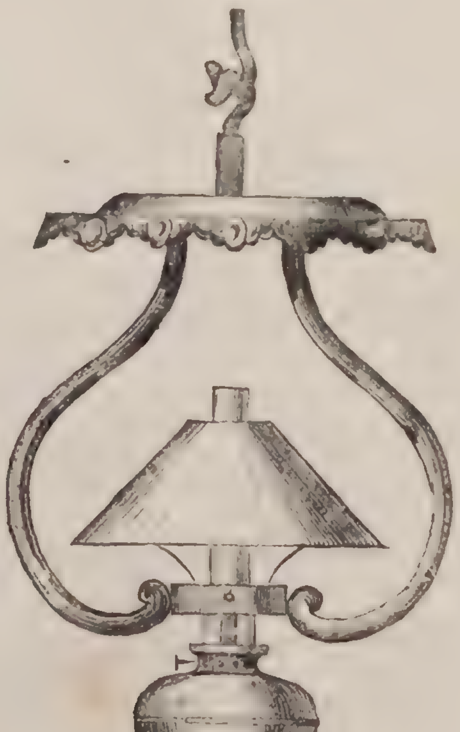


Fig. 6.



Neuburger's Lamps.

665 **Niédrée, Jean Edward**, *Passage Dauphine, Escalier E, Paris*—Bookbinder.

Bocace des Nobles Malheureux. Bound in levantine morocco, blind filets; lined with morocco, gilt in compartments of small tooling.

Les Histoires de Troye. Bound in levantine morocco, without exterior ornaments; lined with m rocco, gilt in the renaissance style.

Les Controverses des Sexes Masculin et Feminin. Bound in levantine morocco, gilt in mosaic style of the renaissance, called Grolier.

Catalogum Librorum Officiana D. Elzevirii. Bound in levantine morocco, gilt in mosaic, lined with morocco, gilt borders; same style.

Les Grandes Chroniques de France. Bound in levantine morocco, gilt compartments composed in small tooling.

Les Grandes Chroniques de France. Bound in levantine morocco, in the Italian style of the 16th century.

Les Grandes Chroniques de France, 8 vols. Bound in the same style as the preceding.

Prognostication. Fanciful binding in levantine morocco, gilt in small tooling.

Le Terze Rime de Dante. Bound in levantine morocco, blind filets, lined with morocco, gilt in compartments of small tooling.

Métistoire Barragaugne. Bound in levantine morocco, without exterior ornaments, lined with morocco, fancy gilding, and ornamented mark.

La Cour de France turbannisée, and Mellin de St. Gélais. Bound in levantine morocco, small tooled.

Recueil de Pièces Galantes. Bound in levantine morocco, gilt in compartments in small tooling.

Mémoires de Maucroix and Siege d'Orleans. Bound in levantine morocco, blind filets.

Horatius, 2 vols. Bound in levantine morocco, lined with morocco, gilt compartments.

Divers Ouvrages, 7 vols. Bound in fine calf, with gilt backs.

666 **Noel**, sen., 33 *Rue de Lancry*—Manufacturer.

Ivory combs with hollow round teeth, in every variety.

667 **Numa, Grar, & Co.**, *Valenciennes* (*Nord*)—Sugar-refiners.

Samples of sugar extracted, by the process of Mr. Dubrunfaut, from molasses which were considered as exhausted by the ordinary process.

668 **Ochs, J.**, 28 *and* 30 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.

Specimens of fancy articles in cornelian and agate, such as seals, pencils, articles of jewellery, &c.

669 **Oudin-Cormy**, *Bétheniville* (*Marne*)—Manufacturer.

Specimens of unbleached and dyed merino fabrics.

670 **Ozouf, Hyacinthe**, 36 *Rue de Chabrol, Paris*—Manufacturer.

An apparatus for making gaseous liquids. Bottles with capsules. A machine for restraining gaseous liquids.

671 **Paillard, E.**, 16 *Rue du Grand Chantier, Paris*—Manufacturer.

Mirrors with copper and zinc frames.

Various objects in zinc in imitation of bronze.

672 **Paillard, J. M.**, 21 *Rue des Francs-Bourgeois, Paris* (*au Marais*)—Manufacturer.

Specimens of colours used by miniature and water-colour painters, and for various other purposes.

Specimens of black, white, and coloured pencils for drawing and for pastels.

Specimens of paint-boxes in a variety of forms.

673 **Parnuit, V., Dautresme, Sons, & Co.**, *Elbeuf* (*Seine-Inférieure*)—Clothiers.

Gentlemen's superior fancy articles, such as trousers, waistcoats, paletots, for winter and summer, of various colours.

674 **Patoux-Drion, & Co.**, *Aniche* (*Nord*)—Manufacturers.

Window glasses of every description. Blown glass. Chemical products. Framed and quicksilvered looking-glasses.

675 **Pagny, —**, *Bayeux* (*Calvados*)—Manufacturer.

Specimens of lace and embroidery.

676 **Paul, Ulysse**, *Bourg lès Valence* (*Drôme*)—Cotton-printer.

Coloured linen kerchiefs. Fancy silk handkerchiefs. Indian silk pocket handkerchiefs.

677 **Peltereau, Auguste**, *Châteaurenault* (*Indre and Loire*)—Manufacturer.

Specimens of raw hides. Smooth cow-skins. Smooth ox and cow-skin cuttings.

678 **Pesel & Menuet**, 7 *Rue Bourbon Villeneuve, Paris*—Manufacturers.

Samples of cashmere wool-yarn; and single and double yarn for shawls and hosiery. Cashmere tissue cuttings. Cashmere and silk fabrics for dresses. Twilled cashmere cloth.

679 **Petit, Clément**, *Boult* (*Marne*)—Manufacturer.

Pieces of unbleached and dyed merino fabrics of fine quality.

680 **Philip, —**, 16 *Passage Choiseul, Paris*—Manufacturer.

Tortoise-shell bracelets, brooches, ornaments, circlets, and rings.

681 **Pilout, —**, 21 *Rue du Puits de l'Hermite, Paris*—Embroiderer.

An embroidered robe.

682 **Pin-Bayard**, *Roubaix* (*Nord*)—Manufacturer.

Woollen, satin, and satin-de-chine cuttings for dresses, merino, shawls, &c.

683 **Paûl Brothers**, *Paris*—Manufacturers.

Brazeros for Turkey.

Plichon, Victor, 10 *Rue des Filles du Calvaire, Paris*—Manufacturer.

Ornaments, bracelets, ear-rings, rings, and other articles of jewellery of gilt brass.

685 **Poitevin & Son**, *Louviers* (*Seine-Inférieure*)—Manufacturers.

Fancy cloths for paletots (summer and winter materials).

686 **Polliart & Carpentier**, *Aubenton* (*Marne*)—Manufacturers.

Samples of carded yarn. Remnants of Rheims cloths and flannels made by machinery.

687 **Pouyat, J.**, *Limoges, St. Leonards, and St. Yrieux* (*Haute Vienne*) - Manufacturer.

Raw materials for making porcelain. Different samples of articles in porcelain.

688 **Prax & Lambin**, 9 *Passage Basfour, Rue St. Denis, Paris*—Manufacturers.

Saddles of various descriptions. Harness. Various riding appurtenances. English, French, American, and Mexican saddles. Saddle on the plan of Baucher.

689 **Presbourg, Paul**, 56 *Rue Quincampoix, Paris*—Manufacturer.

Various brushes for all kinds of purposes, artistical and commercial.

690 **Saugrin, —**, 11 *Boulevard Montmartre, Paris*—Producer.

Daguerreotype miniatures.

691 **Saintin, Alphonse**, 8 *Rue du Petit Bourbon, Paris*—Engraver.

Frame with engravings.

692 **Séguin, Antoine**, *Rue d'Assas, Paris*—Manufacturer.

Chimney, carved in white marble, medal, basso relievo, panel moulding, angel's head, &c.

693 **Simier, Jean**, 38 *Rue de L'Arbre, Paris*—Bookbinder.

Specimens of bound books.

694 **Slate Works Company of Rimogne and St. Louis-sur-Meuse** (*Rimogne*)—Producers.

Slates of various kinds.

695 **Thibierge, —**, 4 *Rue Vide Gousset, Paris*—Manufacturer.

Perukes for men and women. Fronts for ladies.

696 **Thoumin, Adolphe**, 44 *Boulevard Beaumarchais, Paris*—Manufacturer.

Embossed and cast-brass furniture ornaments.

697 **De Tillancourt, Edmond**, 85 *Rue de Chaillot, Champs Elysées, Paris*—Manufacturer.

Specimens of spun raw silk from the North of France. The produce is intended for light fancy materials, such as gauze, barège, &c.

698 **Tilman, —**, 2 *Rue Ménars, Paris*—Manufacturer.

Patent artificial flowers, for ball dresses, wedding head-dresses, &c.

699 **Tordeux, —**, *Cambrai, Nord*—Manufacturer.

Animal charcoal, of various qualities, for refining sugar.

Machine used in the construction of factory chimneys. This simple machine in wood weighs only 25 lbs., and possesses the great advantage of obviating the necessity of scaffolding.

700 **Trelon, Weldon, & Weil**, *Rue de Bercy, St. Antoine, Paris*—Manufacturers.

Specimens of porcelain knobs of every kind.

701 **Trotté, Henri**, 19 *Rue Quincampoix, Paris*—Hosier.

Specimens of hosiery, network, &c.

702 **Trouvé, Cutivel, & Co.**, *La Suze* (*Sarthe*). Tanners and Curriers.

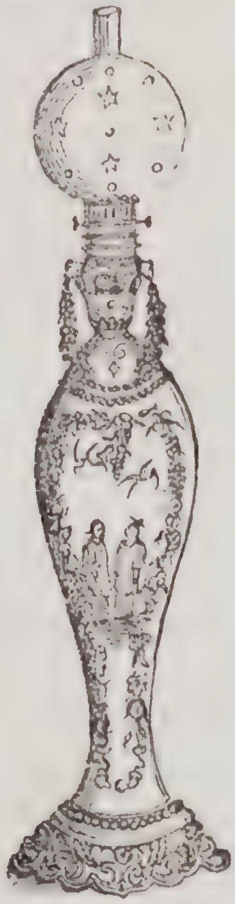
Specimens of white calf leather; japanned calf leather; boot legs.

703 **Truc, Claude**, 9 *Rue de Saintonge, Paris*—Manufacturer.

Moderator lamps in bronze and porcelain, without wheel work, adapted for use in large rooms and for table lights, giving a very clear light. One of these lamps is represented in the annexed cut. Composition china lamps of Sèvres shape, &c. adapted for use in summer as flower vases.

704 **Tuvée & Co.**, 13 *Rue de Choiseul, Paris*—Manufacturers.

Specimens of ribbons, silks, and superfine fancy goods.



Truc's Moderator Lamp.

705 **Vachon, Son, & Co.**, *Place Satonay, Lyon* (*Rhône*)—Manufacturers.

Machines for cleansing corn, consisting of a seed-cleaner and separator, with an inclined plane, and with a cylindrical arrangement for millers. By this contrivance the wheat is thoroughly separated from all extraneous matter, gravel, dirt, &c.

706 **Valérius, Philippe**, 7 *Rue du Coq, St. Honoré, Paris*—Manufacturer.

Bed for patients under treatment for reduction of femoral dislocations. Orthopedic belts and stays. Concave inclined plane for fracture of the femur, with drawing screw. Invisible bandages, &c.

707 **Vales, Constant**, 161 *Rue St Martin, Paris*—Manufacturer.

Various kinds of pearls; pearl head-dresses; statuettes mounted with pearl, &c.

[False pearls were invented in the time of Catherine de Medicis, by a person of the name of Jaquin. They are made of small globules of glass, blown by the ordinary lamp. The pearly lustre is communicated by introducing, by means of a blowpipe, a small quantity of nacreous substance obtained from the surface of the scales of a small fish very common in the Seine and the Rhine, and also in the Thames. This substance, preserved with sal ammoniac in a liquid state, is commonly known under the name of "Oriental essence." After having covered the inside of the pearl with this liquid, a coating of wax is added, which is coloured to the required shade. The manufacture of pearls is principally carried on in the department of the Seine, in France. There are also manufactories in Germany and Italy, but to a small extent. In Germany, or rather Saxony, a cheap but inferior quality is manufactured. The globe of glass forming the pearl, in inferior ones, being very thin, and coated with wax, they break on the slightest pressure. They are known by the name of German fish pearls. Italy, also, manufactures pearls, by a method borrowed from the Chinese; they are known under the name of Roman pearls, and are a very good imitation of natural ones; they have on the outside a coating of the nacreous liquid. The Chinese pearls are made of a kind of gum, and are covered likewise with the same liquid. In the year 1834, a French artizan discovered an opaline glass of a nacreous or pearly colour, very heavy and fusible, which gave to the beads the different weights and varied forms found amongst real pearls. Gum instead of wax is now used to fill them, by which they attain a high degree of transparency, and the glassy appearance has been lately obviated by the use of the vapour of hydro-fluoric acid. This acts in such a manner as to deaden the surface, and remove its otherwise glaring look.]

708 Valin, Jean, *Faubourg Mont Jovis, Limoges (Haute-Vienne)*—Manufacturer.

Specimens of articles in porcelain. Decanters. Chandeliers. Basins. Statues, &c.

709 Valtat & Rouillé, 70 *Rue de Rambuteau, Paris*—Manufacturers. (Agents, Graetzer & Hermann, 3 *Huggin Lane, Wood Street.*)

Specimens of shirts. Shirt fronts of every kind, made by machinery and by hand. Shirt collars. Cravats. Flannel waistcoats, &c.

710 Vaucher, Picard, *Rethel (Ardennes)*—Manufacturer.

Pieces of merino fabric, plain and coloured.

711 Vandenbroucke, E., 16 *Rue de Strasbourg, Paris*—Inventor and Manufacturer.

The coffee-roaster: a machine which preserves the flavour of the article by taking off its dampness. At the end of the roller, there is a little door, which is left open till the colour of the coffee changes; by shutting this, the flavour is concentrated, and the torrefaction is produced by the vapour of the coffee. In the inside of the roller, is a piece of woven wire which hinders the coffee from touching the sheet iron, and prevents it from burning. There are also fans for dividing the coffee or cocoa, and producing always the same degree of torrefaction. The stand of these coffee-roasters is in cast-iron to admit of the burning of wood, coke, or charcoal fuel. There is besides, a little rail to draw the roller back, and an iron support to hold it.

Small coffee-roasters, for private families, with or without the support.

712 Vanderdorpel, Son, 3 *Rue Chapon, Paris*—Manufacturer.

Specimens of gilt, lithographed, and coloured borders, corners, ornaments, and frames. Gilt and fancy papers. Various embossings.

713 Van Eeckhout & Co., 38 *Rue Notre Dame des Victoires, Paris*—Manufacturers.

White Alençon, Brussels, Binche, and Flanders lace. Black Chantilly, Bayeux, Caën, and Grammont lace.

714 Van Leempoel de Colnet & Co., *Quiquengrogne Glass-works, near Chapelle (Aisne)*—Manufacturers.

Large and small-sized bottles, for all kinds of purposes. The manufacturers having visited the principal glass manufactories of England and the Continent, and after many years' indefatigable attention to the improvement of glass, have succeeded in the manufacture of a most beautiful and strong material—the atmospheric pressure being from 25 to 36. Specimens of champagne bottles.

715 Vantroyen & Mallat, *Lille (Nord), Rue Jemmapes*—Cotton-spinners.

Specimens of cotton-yarn for muslins; water-twist glazed for lace and bobbin-net; dyed and bleached yarns; glazed yarn (imitation of silk), &c.

716 Vasse, —, *de St. Ouen. Manufactory at Leribour's, Pont Neuf, Paris*—Producer.

Universal gauge, comprising 17 different gauges, and indicating which to use in every particular case.

717 Varrall, Middleton, & Elwell, 9 *Avenue Trudaine, Paris*—Manufacturers.

A continuous paper machine, with a complementary machine to divide into sheets. This machine is represented in the engraving on the next page.

718 Vaugeois & Truchy, *Rue Mauconseil, Paris.*

Specimens of gold and silver embroidery and lacework.

719 Vedy, Felix, 52 *Rue de Bondy, Paris*—Optician.

Astronomical instruments for the navy, mounted in bronze, in mahogany cases. Small pocket sextant in copper. Six-inch sextant, with five glasses, &c.

720 Veissierè, Arnaud, *Puteaux, near Paris (Seine)*—Dyer.

Specimens of dyed stuffs of Merino wool.

721 Velin Brothers, *Gerberville, Meurthe*—Manufacturers.

Fabrics for trousers, made of unbleached yarn, plain, or with cotton mixture, of various shades.

722 Verge, A., sen., 17 *Chaussée Magdeleine, Nantes.*

Oak-wood arm-chair, style Pompadour.

723 Verstraete Brothers, *Lille (Nord)*—Linen-spinners.

Specimens of twisted thread, for sewing, and for the mounting of weaving-looms, manufactured on a new process, patented in France, England, and Belgium, by which a glossy appearance is given to the article.

[The application of a process for communicating a gloss to the thread, is claimed as the invention of the present exhibitors. The intention of the process is to increase the beauty of appearance of the thread, and to communicate to it additional strength. For the healds or harness of the Jacquard loom, which are the threads dividing those of the warp, it is of great consequence that no undue friction should be experienced by the latter in the process of weaving. The facility of the use of sewing thread is also greatly increased by giving its surface a smooth and polished character.—R. E.]

724 Van Overbergh, —, 9 *Rue de Choiseul, Paris*—Manufacturer.

Specimens of pianofortes.

724a Versepuy, Riom, Chemist. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Specimens of white and red lead, manufactured by a new process.

725 Viault, Este, 17 *Rue de la Paix, Paris. Depôt at MM. Thierry & Sons,* 278 *Regent Street*—Manufacturer.

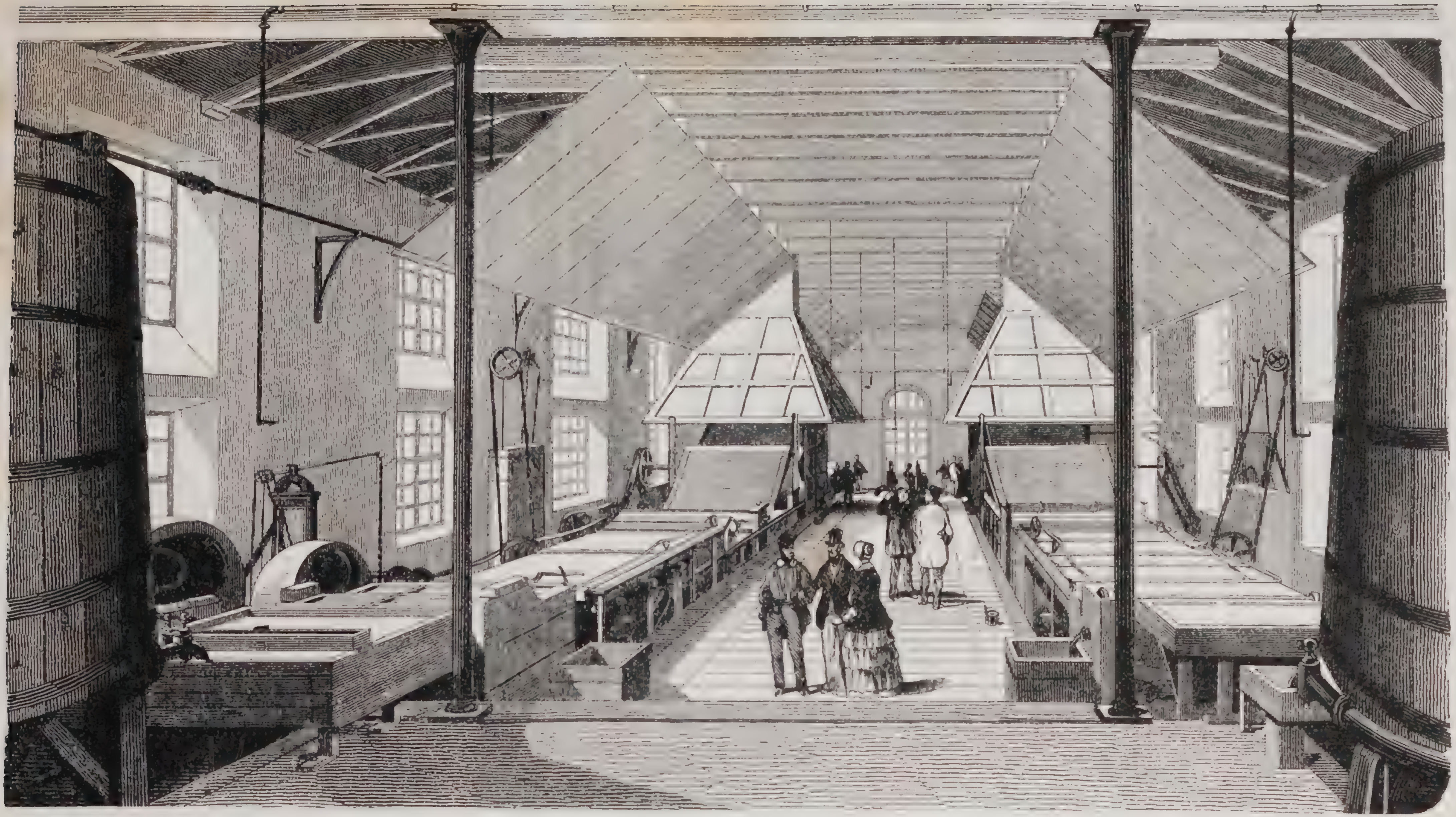
Specimens of slippers, ladies' boots, and ladies' foot coverings, of every description.

726 Vie, Joseph, 161 *Rue St. Jacques, Paris*—Inventor, Manufacturer, and Patentee.

Patent vulcanised India-rubber elastic stockings, for varicose veins; exhibited for fineness and conveniency.

Supporting belts.

Elastic fabrics in vulcanised caoutchouc, for ladies' stays.



Paper-mill, with Messrs. Varrall, Middleton, and Elwell's Continuous Paper Machines

727 **Vidal, Raymond**, *Toulouse* (*Haute Garonne*)—Manufacturer.

Specimens of vermicellis, nutritive pastes, starch, &c.

728 **Vigouroux, Stanislas**, *Reims* (*Marne*)—Manufacturer.

Combed-carded threads; plain and printed fabrics in cotton, web, and fancy threads, for ladies' dresses, and for waistcoats. Bobbin-machine, with distinct wimbles. Patented.

729 **Viguier, B.**, 6 *Boulevard, Beaumarchais, Paris*—Manufacturer.

An hydraulic foot-warmer, or chafing-pan, adapted for day or night use. Patented.

730 **Vincent & Tisserant**, 21 *Rue Michel-le-Comte, Paris*—Manufacturers.

Sealing-wax, wafers, gelatine-sheets, writing-inks, &c.

731 **Violard, Georges**, 4 *Rue de Choiseul, Paris*—Manufacturer.

A shawl and a piece of lace, in a new style of manufacture. Exhibited for novelty and cheapness.

732 **Virebent Brothers**, *Toulouse* (*Haute-Garonne*)—Manufacturers.

Representations of different well-known capitals or figures of monuments, in plastic freestone: ornamented chimneys in the renaissance style, &c.

The natural colour of the clay employed is white or buff; for certain articles Etruscan red and black painting and gilding may be applied with facility.

Complete and varied series of decorative articles for the construction or restoration of the interior and exterior of churches.

733 **Vissiere, —**, *Argenteuil* (*Seine and Oise*)—Manufacturer.

Large and pocket chronometers, indicating minutes and seconds.

734 **Vivet, Edme Theodore**, 6 *Rue des Petits Hôtels, Paris*—Decorative Painter.

Patterns of hangings painted with wax.

[It would seem that this method of decoration has been long known, and dates as far back as the 16th century. In certain old castles, and particularly in that of Chenonceaux on the Cher, remnants of them have been discovered in an excellent state of preservation. The hangings appear little influenced by the ordinary agencies of decay.—R. E.]

735 **Vuillaume, Jn. Bte.**, 42 *Rue Croix des Petits Champs, Paris*—Manufacturer.

A complete set of string and bow musical instruments, with bows made by patent machinery. Violins, tenors, and violencellos, in imitation of Straduarius, Guarnerius, Amati, Magini, &c.

736 **Wagner, J.**, 47 *Rue Neuve des Petits Champs, Paris*—Manufacturer.

Two eight-day clocks, striking the hours and the quarters, remontoir movement, with concentric wheels, and compensating pendulum with levers. The one has an independent pin escapement, and the other has an escapement with independent mass of impulse.

An eight-day clock, of common construction, striking the hours and the half hours, remontoir movement, and pin escapement applied directly on the pendulum rod, with simple compensator.

A one-day clock of common construction, striking the hours and half hours, escapement with direct impulse on the pendulum.

An eight-day clock of common construction, striking the hours and the half hours, with new arrangement of pin wheels to prevent the pins from being bent or broken, and a simple compensator.

An eight-day clock, striking the hours, the quarters, and one blow before every quarter, with improved compensator.

An eight-day clock, of polished brass, striking the hours and the half hours.

The going train of all these clocks has an auxiliary spring, to continue the motion during the winding up.

Clock-work mechanism with entirely new arrangement, capable of uniformly regulating any rotary motion of a given angular speed. This machine is intended for registering observations either in natural philosophy or astronomy, and especially those of short duration, to the hundredth part of a second. This clockwork motion may be employed in large establishments, to indicate the time on a great number of dials. The minutes and even the seconds may be shown, whether the motions are produced in the ordinary way, or by electricity.

A new machine for demonstrating the law of falling bodies.

A machine, called marigraph, for registering, in a permanent manner, the height of the tides, &c.

An instrument, called barograph, for registering barometric variations.

A dynamometer, applicable to agricultural instruments, chiefly to the plough.

Four metronomes—instruments to beat and divide the time. Two are of simple construction, and two have a bell that strikes a blow at every measure of two, three, or four.

Four instruments—for demonstrating certain principles in horology.

737 **Walwein, —**, 24 *Passage de l'Industrie, Paris*—Designer.

Designs for cloth and Jacquard fabric printing establishments.

738 **Watrelot-Delespaul**, 10 *Rue Nationale, Lille* (*Norde*)—Manufacturer.

Chocolate of various descriptions.

739 **Weber, J.**, 2 *Rue Hautefeuille, Paris*—Bookbinder.

Specimen of a new system of bookbinding, in use at the National Library, at the Museum of History, and at the St. Geneviève Library.

This system enables any one to bind, with the greatest ease, any number of prints, plans, maps, and drawings, of any size, from one leaf to a volume, and without injuring the margins.

This binding unites with taste and elegance the indispensable quality of solidity. A volume thus bound, when placed in the library, has the appearance of carefully finished binding, from which it only differs in its mechanism, this being placed in the interior.

740 **Weygand, Ate.**, 108 *Vieille Rue du Temple, Paris*—Manufacturer.

Clocks and candelabra in bronze; statuettes and groups in artistic bronze.

741 **Whitaker, Son, & Co.**, *Charleville* (*Ardennes*).

Sheets and cards for wool or cotton.

742 **Williams, Henri**, 111 *Rue de Charenton, Paris*—Manufacturer and Proprietor.

Three panels, in relief in the Tuscan, Gothic, and Renaissance styles. The woodwork in deal, is totally covered with paper in imitation of woods, marbles, and agates; exhibited for workmanship and economy.

These panels show an entirely new method for the decoration of banquet halls, ball and concert rooms, theatres, &c.

744 **Wolf, —**, 2 *Rue St. Appoline, Paris*—Ivory-carver.

Specimen of ivory carving.

745 **Yon, Mrs.**, 110 *Rue Vieille du Temple, Paris*—Proprietor.

A frame in oak containing,—

1. The Flight into Egypt, by Gayrard and Yon.
2. Christ on the Cross, by Vechte.
3. The Assumption, after Muck.
4. The Marriage of the Virgin, after Raphael.
5. The Carrying of the Cross, after Overbeck.
6. Daphnis and Chloe, by Gayrard and Yon.
7. German Virgin, after Albert Durer.
8. Virgin of the Lake, after Leonardo da Vinci.

747 **Zeiger, Aug.**, *Rue des Marronniers, Lyons*—Inventor.

The gymnasium of the pianist, an octave pianoforte. A patent invention.

749 **Affourtit, Gaston Louis**, *Vallerauge (Gard)*—Producer.

Specimens of silks and silk cocoons.

750 **Allard & Claye** (late **Violets**), 317 *Rue St. Denis, Paris.* Depôt, 11 *Great Castle Street, Regent Street, London*—Manufacturers.

Toilet soaps of various kinds in masses and shapes for use, manufactured by a hot process. Liquid or cream shaving soaps. Perfumed essences or extracts, in variety. Improved spirituous acetine de thridace or toilet vinegar. Cosmetics and other perfumes.

751 **Appert, C.**, *Paris*—Manufacturer.

Preserved roasted and stuffed mutton, and other articles of food.

[The specimen of an entire animal preserved from decay, and in a state fit for human consumption at any present or future period, is a striking illustration of the success of this method of preparing food, which was originally invented by M. Appert, and has since been largely practised in this and other countries. The process is as follows—the substance to be preserved is placed in a close vessel and heated in a water bath until it is considered to have been sufficiently done. It is then hermetically sealed, and a vacuum is formed by the condensation of the steam. It appears, however, that somewhat of the delicacy of the flavour of the food thus preserved was lost in the process, which was due to its absorption of oxygen. This has been recently obviated by M. Charles Appert, by exposing the article to be preserved, to heat for a much shorter period. By this means its original fresh taste is preserved, and retained for any length of time. The exclusion of atmospheric air from the cases containing these articles forms the principle of M. Appert's original patent.—R. E.]

752 **Arera, Noel Guillaume**, 3 *Rue de la Barillerie, Paris*—Inventor and Manufacturer.

A tell-tale clock, which also indicates the days of the month. Another, with simple movement. An hydrometer for liquids. Clock with alarm bell and new dial which revolves for the purpose of facilitating the winding up of the clockwork.

753 **Arnheiter, Michael**, 9 *Place St. Germain, Desprix, Paris*—Manufacturer.

Drying-frames, pruning-knives, fumigating apparatus, grafting-knives, hedging-knives, saws, and various other implements used in horticulture, agriculture and domestic economy.

754 **Aubergier, Pierre Hector**, *Clermont Ferrand (Puy de Dôme)*—Manufacturer.

Specimens of French opium and syrup of lactucarium.

755 **Ayné Brothers**, *Lyon (Rhône)*, 26 *Port St. Clair*—Manufacturers.

Specimens of dyed silks; silk for lace; finished edging for lace; edging for embroidery.

756 **Barrande, Jn. Bte.**, 26 *Rue du Fer à Moulin, Paris*—Tanner.

Specimens of tarring, tanning, and dyeing, consisting of manufactured calf, kid, lamb, sheep, and goat skins, for boots and shoes, gloves, braces, and garters.

757 **Barthelats, Louis de**, *Logères, Commune de Châtel de Honoré (Allier)*—Manufacturer.

Specimens of silk and silk cocoons.

758 **Bersin, A.**, Agent of the Marsanne Mines, *Drôme, and at 22 Rue de Trévise, Paris.*

Specimens of French tripoli, called tellurine. Pink, yellow sifted, and native tripoli, for polishing gold, silver, copper, steel, zinc, &c.; also for cleaning marbles and oil paintings.

759 **Beard, Jules**, 20 *Rue Jean Jacques Rousseau, Paris*—Inventor.

Specimens of copper-plate printing, with paper imitating the reflection of mother-of-pearl. A new invention.

760 **Benouville, Mélanie**, *Igny, Canton de Gray (Haute-Saône)*—Manufacturer.

Skeins of raw silk.

761 **Beranger, Joseph, & Co.**, 97 *Rue Centrale, Lyon (Rhône)*—Manufacturers.

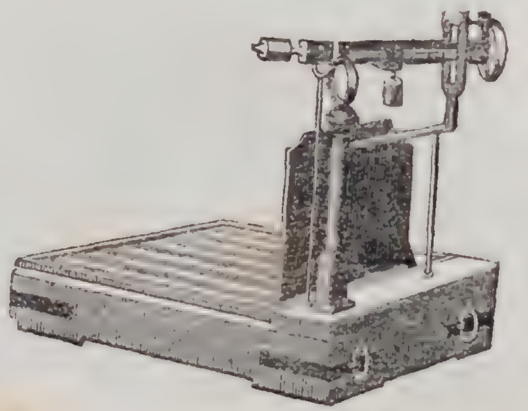
Steelyard pendulum scale for shops, weights, steelyards, and for general use.

New and improved weighing machines, approved and adopted by most of the railway companies and government offices. Patented in France and England.

Self-registering weigh-bridge for weighing carriages, cattle, &c. It indicates the number of all articles weighed during a day, or any other given time, together with the weight of each article and its number (the articles being numbered consecutively). This information is marked upon a table by the instrument itself, without causing any delay, as five, six, or even seven carriages can be weighed per minute.

Beranger's peso-counter. Fig. 1 represents a portable

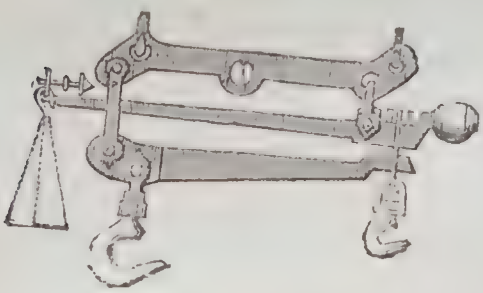
Fig. 1.



apparatus, possessing all the advantages of a beam balance, without the inconvenience of weights, or the disadvantages attaching to the steelyard. It has been adopted, from its speedy operation, by several railways, also for the general service of the marine arsenals, and other establishments in France.

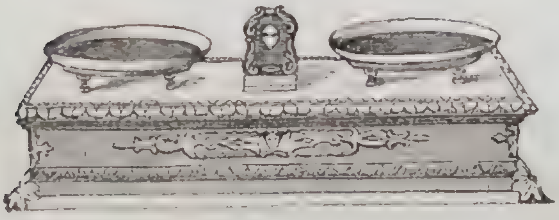
New steelyard. Fig. 2 represents an instrument capable of weighing articles without the employment of many weights. It may be advantageously used in place of the ordinary steelyard or beam weighing-machines, and will indicate the smallest fractions. It is compact and convenient in form and size, moderate in price, and is applicable to any commercial purposes, from the lightest articles, to heavy goods weighing from 10 to 12 tons.

Fig. 2.



Beranger's pendulum scale. Fig. 3 shows a novel arrangement of weighing apparatus, called by the inventor, "Balance pendule." It is very much used in all kinds of retail business, combining the advantages of beauty, solidity, and precision. It requires neither cleaning nor repairs.

Fig. 3.



762 **Bernard, Desiré F.** 30 *Rue des Mamourzets, Paris*—Optician.

Microscope; camera lucida; and instruments for land-surveying.

763 **Bert, —,** 7 *Rue St. Marcel, Lyon* (*Rhône*)—Manufacturer.

Silk fabrics of ancient manufacture; figured brocade and taffeta; chasuble cross; woven likenesses of Louis the Fifteenth and Catherine the Second, &c.

764 **Bertrand, Adolphe,** 26 *Port St. Clair, Lyon* (*Rhône*)—Manufacturer.

Silk robe, used by the Parisian ladies. Silk robe, used by the ladies of the Levant. Specimens of parasols, shawls, chiné, and all sorts of printed fabrics. Embroidered robes, Pompadour robes, &c. Poplin dress, equal to the finest Irish fabrics; exhibited for its style and manufacture. The exhibitors claim to have been the first to introduce the poplin of Lyons, and to create for it a general demand.

765 **Beyerlé, Gustave,** 44 *Rue Magazine, Paris*—Manufacturer.

Cylindrical optical instruments; concave glasses; polyprisms; lenses; eye-glasses.

766 **Biondetti, Henri,** 48 *Rue Vivienne, Paris*—Manufacturer.

Trusses and orthopedic bandages.

767 **Bisiaux, Georges Adolphe,** 54 *Rue de la Victoire, Chaussée d'Antin, Paris*—Decorator.

Three pictures. 1st, an imitation in oil painting of all kinds of marbles. 2nd, an imitation of all sorts of native and foreign wood: this painting is in water colours, upon a ground prepared in oil, which preserves its freshness, because the colours employed are all vegetable. 3rd, part of a dining-room wall, illustrating the use of the above specimens.

This mode of decoration may be applied to all kinds of dwellings, and is employed in most of the public establishments of Paris. The diversity of its shades renders it of easy application under various forms.

768 **Blanchet Brothers,** *Fures, near Tullins* (*Isère*)—Manufacturers.

Native steel tire, planed, for locomotive wheels, said to last considerably longer than the best iron tire, and to wear with perfect regularity until the last.

769 **Boche, Michel,** 19 *Rue des Vinaigriers, Paris*—Manufacturer.

Powder-flasks, and various sporting implements. Patented in England.

770 **Boeringer & Co.,** 6 *and* 8 *Cour des Miracles, Paris*—Manufacturers.

A door with the application of a security bolt on a new system.

771 **Bonneton, —,** *St. Vallier, Drome*—Silk-throwster.

Specimens of raw and thrown silks. Silk cocoons.

772 **Bonzel Brothers,** *Haubourdin* (*Nord*)—Manufacturers.

Specimens of white lead; ultramarine blue. Ceruse manufactured by the new process of Mr. Charles Kleberger.

773 **Bossi, Jean Baptiste,** 26 *Rue St. Hyacinthe, St. Michel, Paris*—Manufacturer.

Marble table in mosaic work.

774 **Bouasse, Lebel, & Co.,** *Rue du Petit Bourbon, Paris*—Gelatine-makers.

Gelatine figures, pinked and ornamented with paste brilliants: a variety of specimens.

775 **Bouchard-Huzard, W., Mrs.,** 5 *Rue de l'Eperon, Paris*—Printer and Bookseller.

Natural history of the Maïs, of golden birds; description of machinery. The art of rearing silk-worms, &c.

776 **Boucher, E., & Co.,** 15 *Rue des Vinaigriers, Paris*—Manufacturers. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Culinary vases, hardware and trellis; tinned by electro-chemical process. Patent coppered iron wire. Zinc wire, applicable to railings, metallic roofings, horticultural, and other purposes. Wire for carding, preserved from oxidation. Castors on a new principle. The electro-chemical process of tinning employed in the manufacture of these articles, and invented by Mr. Roseleur, is considered cheaper and more effective than any yet discovered.

777 **Bouquillard, —,** 226 *Rue St. Martin, Paris*—Lithographer.

A frame containing a lithographic plan of Paris.

778 **Bourgery, Caroline**, 24 *Rue Hautefeuille, Paris*—Designer and Proprietor.

Thirty paintings of pathological anatomy, modelled in relief, part of the collection of the Thibert Museum in Paris.

Twelve pictures representing landscapes, with animals, fruits, &c.

The paintings, in relief, of the late Dr. Thibert, form a museum, containing—first, a large gallery of pictures of fruits and animals of every species in graceful and variegated groups; and, secondly, the various phases of human disease, comprising more than 2,000 cases of pathological anatomy, taken from the patients themselves by means of a new process of moulding and painting, which combines solidity of material and durability of colouring.

779 **De Braux, d'Anglure**, 10 *Rue de Castiglione, Paris*—Inventor and Patentee.

Articles in bronzed zinc. A lion, by Mr. Rouillard. Two vases, Albani. Bust of Lamartine, by Count d'Orsay. Armed Cupid. Silent Cupid. Exhibited for novelty, accuracy, and cheapness of production.

780 **Bree & Jeoffrin**, 81 *Rue Richelieu, Paris*—Milliners.

Millinery articles; head-dresses, bonnets, caps, &c.

781 **Brison, P., & Son**, *Rennes* (*Ile and Vilaine*)—Tanners.

Specimens of strong and smooth leathers. Crusted calf-skins ready for varnishing.

782 **Bronski**, Major, Count **D'Bronno**, *au Château de St. Selves, near Bordeaux* (*Gironde*)—Silk-throwster.

Unbleached silk and silk cocoons, the produce of the breed of Bronski silkworms. These specimens are of exquisite whiteness, and far superior in quality to the produce of ordinary silkworms.

783 **Budy, Jean Pierre Antoine**, 13 *Rue de la Roquette, Paris*—Manufacturer.

Specimens of kitchen utensils and cast-iron stove.

784 **Buisson, Eugene, Robert, & Co.**, *de Manosque* (*Basses Alpes*)—Agriculturist.

Three skeins of raw silk.

785 **Cabasson, Guillaume Alphonse**, 12 *Rue Taranne, St. Germain.*

Drawings on wood for typographical engraving.

786 **Cabirol, J. Martin**, 6 *Rue St. Marc, Paris*—Surgical Instrument-maker.

Instruments and apparatus in gutta percha used in surgery. Electro-magnetic tissue and galvanic poultice, by Dr. Récamier.—Patented in France and England, &c.

788 **Callaud-Belisle, Nouel, de Tinan & Co.**, *Angoulême*—Manufacturers.

Specimens of papers for ledgers, letter-writing, &c.; printing, drawing, and tracing papers.

789 **Camus, M.**, *de la Rochelle* (*Charente-Inférieure*)—Producer.

Boxes of sardines preserved in oil.

790 **Camion-Pierron**, *Mezières, Ardennes*—Manufacturer.

Iron and brass articles for buildings and furniture.

791 **Carnet-Saussier**, 95 *Rue Rambuteau, Paris*—Manufacturer.

Specimens of preserved food and pickles, both in boxes and bottles; specially truffles and champignons, peas, bottoms of artichokes, French beans, flageolet beans, and every sort of fruit in bottles for hashes and stews. Specimens of vinegar, made of fine herbs and tarragon.

792 **Carteaux & Chaillou**, 20 *Rue Louis-le-Grand, Paris*—Physicians.

An anatomical model in stamped leather, modelled from actual dissections of the parts represented.

793 **Cerceuil, Louis François**, 33 *Rue Traversière, Paris*—Manufacturer.

Specimens of dyed and milled wools, and paste colours for paper-hangings.

794 **Champoiseau, Noel**, *Tours* (*Indre and Loire*)—Manufacturer.

Specimens of raw silk, white and yellow. White and yellow hair-weft. Sewing silk. Floss silk unbleached and dyed. Organzine silk, &c.

795 **Chapus & Richter**, *à Wazemmes-les-Lille* (*Nord*)—Manufacturers.

Specimens of ultramarine of ten different qualities.

796 **Chartron & Sons**, *St. Vallier* (*Drome*)—Silk Spinners and Reelers.

Specimens of raw silk. Specimens of thrown silk. Specimens of silk cocoons.

797 **Chatelain & Basset**, *à la Rochelle* (*Charente-Inférieure*)—Producers.

Specimens of preserved food.

798 **Claye, J.**, *Rue St. Benoît, Paris*—Printer.

Eight frames, containing impressions of wood engravings of various styles, as a sample of machine-printing. These engravings are after great masters of both ancient and modern schools:—Albert Durer, Rubens, Rembrandt, Teniers, Ribera, Murillo, Van Ostade, Claude Lorraine, Gericault, Prudhon, Chardix, C. Vanloo, &c.

Two small frames: one of them containing an engraving of "The Virgin and Child," after C. Vanloo; the other, the block from which this engraving was printed.

Another frame: a wood engraving of a vase of flowers, printed on silk by machine.

Three albums, in folio: two of these comprise a collection of wood-engravings; (subjects taken from the great masters). Machine-printed.

A "History of Painters," in one volume 4to; both text and vignettes machine-printed. This book is one of the most beautiful examples of illustration by wood-engraving; and contains impressions from *chefs d'œuvre* of the first masters of all nations. The work is, perhaps, the most beautiful yet produced in French literature, in connection with the fine arts.

The "Fables of Lafontaine," a large octavo volume, with text and vignettes double bordered. The printing of this book was a work of considerable mechanical difficulty, owing to the double bordering that encloses each of its pages.

"Raphael," by Lamartine. Ceramic studies, by Jane de Vaudreuil. Specimens of ordinary machine-printing.

The works of Walter Scott. "History of the Crusades," by Michaud. Specimens of machine-printing from stereotype plates. Titles, covers, &c., all printed by machine.

The works of Béranger: a little volume in 32mo, printed in very small type. Machine-printed, and ornamented.

799 Clerget, Charles Ernest, 10 *Rue Albouy, Paris*—Producer.

Frames containing designs and proof engravings.

800 Coint-Bavarot, & Son, 26 *Rue des Capucins, Lyon* (*Rhône*)—Manufacturers.

Steel and brass weaving-combs of all descriptions.

801 Collas, Marc Antoine Claude, 8 *Rue Dauphine, Paris*—Manufacturer.

White and coloured essence of almonds, and digitaline pine-apple, or ananas.

802 Colville, M. & Mdlle., 22 *Rue des Vinaigriers, Paris*—Manufacturers.

Specimen of coloured painting on a square plate of glazed enamel paste : " The Queen and Prince Albert," by Miss Anna Colville.

Specimen of coloured painting on white enamel : " Flowers and fruits."

Specimen of coloured painting on white enamelled iron : " Bunch of flowers."

Complete set of colours for painting on porcelain. Specimen of glazed blue painted plates suitable for an ordinary fire of an oven, and for grounds for painting on porcelain.

A small square plate of porcelain, painted with a deep blue, suitable for grounds and ornaments on china, or for porcelain vases. Specimens of the same on pasteboard, prepared as a water colour. This blue is said to be composed of refined cobalt, without any particles of flint, and is said to differ entirely from the German smalt, to which it is superior in colour and durability.

803 Chateau-Chinon & Lespare, *Paris*—Producers.

Sheets of the new map of France, drawn by order of the French Government, by the staff-officers of engineers, engraved on the scale of 1 to 80,000, by Mr. Jules Cosquin, chief engraver to the French War-office, 71 Rue de l'Université, Paris.

804 Vesoul, *Orleans, Moulins et Reims*—Producer.

Plans of towns, engraved on the scale of 1 to 20,000, by Mr. Jules Cosquin, chief engraver to the French War-office, 71 Rue de l'Université, Paris.

805 Couteaux, Alexander Ildephonse, *Tavaux-Pontsericourt* (*Aisne*)—Inventor.

Apparatus for writing in bed during the night, without light, and without inconvenience.

806 Courtépée-Duchesnay, 11 *Rue du Renard, St. Sauveur, Paris*—Tanner and Currier.

Specimens of calf-skins tanned and curried. Boot-fronts and boot and shoe leather. Exhibited for durability and elasticity.

807 Curtial, —, 9 *Quai de Javel, Grenelle* (*Seine*)—Manufacturer.

Bottles of artificial ultramarine blue.

808 Courtois, Etienne, *Chaussée de Clignancourt, Paris*—Tanner.

Polished leather for saddlery. Calf-skins polished for boots and shoes.

809 Croco, Francois, 163 *Rue de Charonne, Paris*—Manufacturer.

Various pieces of cashmere, for waistcoats and comforters.

810 Cruchet, Victor, 58 *Rue Notre Dame de Lorette, Paris*—Manufacturer.

Wainscoting for the interior of rooms. Cartons-pierre. Figures of animals in carved oak. Consoles ornamented with basso-relievo.

811 Dagand, —, Sculptor.

Heads—spring, summer, harvest, innocence.

Statuettes—Mr. Dupin, Mr. D'Argout, and Mr. de Thury.

812 David, Charles, 12 *Rue Mauconseil, Paris*—Manufacturer.

Turkey leather. Shagreen morocco. Shagreen sheep-skin.

813 Deaddé, L, 18 *Boulevard de Charonne, Charonne* (*Seine*)—Manufacturer.

Varnished calf leather for boots and shoes, black, coloured, and morocco leather grained.

Black varnished calf-hides, and plain and grained cow-hides, for saddlery.

Black and white heifer and white buffalo hides, for army accoutrements.

814 Derazey, —, *Mirecourt* (*Vosges*)—Manufacturer.

Musical instruments and violins.

815 Descartes, Joseph, 6 *Rue du 29 Juillet, Paris*—Cabinet-maker.

Divan arm-chairs, chairs, sofas, and toilet-table; ebony and lacquered articles.

816 Desplanque, jun., *Lizy-sur-Ourcq* (*Seine et Marne*)—Manufacturer.

Machines for washing and cleansing wool. A tool for combing wool. Samples of washed and combed wool. Specimens of woollen yarns, of different colours and qualities.

817 Desroisiers, A., *Moulins* (*Allier*)—Printer.

Ancient Auvergne and Velay, five volumes folio, with atlas of 150 plates. This beautiful and curious work of the Benedictines, undertaken at the sole expense of the publisher, and under his own care and superintendence, represents with fidelity the monuments and most remarkable events of these two important provinces.

Ancient Bourbonnais, was published some years before the above, at the expense of a few amateurs. The edition of this valuable work is almost exhausted.

Various other works, beautifully illustrated.

818 Devers, Joseph, 32 *Rue d'Enfer, Paris*—Manufacturer.

Terra cottas painted with enamel-paste. Virgin, of enamel-paste on lava. Painting with enamel-paste on china.

819 Deydier, Mrs., 90 *Rue de l'Ecole, Vaugirard*—Manufacturer.

Zinc vases. Roofing for belfry. Zinc dormer window, &c. Flower-pots.

820 Didier, Francis, 40 *Rue de Jeuneur, Paris*—Manufacturer.

Design for printed shawl, with appendages.

821 Doublet & Huchet, 12 *Rue du Moulins, Paris*—Typographic Engravers.

Two sets of vignettes, and ornamental letters for type-founding, with proof impressions.

822 DOUMERC, E., *Jouy, St. Morin (Seine and Marne)*, Director of the Joint-Stock Company of Marais and St. Marie Paper-Mills. Depôt, 3 *Rue du Pont de Lodi.*

Papers—for type printing, lithography and copper-plate printing, for pencil and water-colours of various descriptions. Cards for Jacquard looms. Filigree paper for bank-notes and share-vouchers. These are used in the banking houses, &c., of France, Italy, Greece, &c. Papers for ledgers, and tradesmen's cards and boxes.

823 DOREY, JULES FRANCOIS, *Hâvre (Seine-Inférieure)*—Manufacturer.

A machine for manufacturing the healds of weaving-looms. New system of plates with eyelet-holes for weaving, and machine for making them. In these plates the bend of the eyelet-holes is entirely removed; this takes away an obstruction which, in the action of fulling, often causes the threads of the warp to break. It gives to the eyelet-hole an equal opening both at top and bottom; and greater liberty to the warp to give passage to the little knots in the thread, which are no longer stopped in passing through the eyelet-hole, which often happens in the common plates. The workman no longer requires wire to repair the broken threads, and the length of the eyelet-hole can be much reduced. These plates last longer than the others, and are more regular, being made by machinery.

The machine is remarkable for its lightness; a child of seven or eight years old can make it work during 10 or 12 hours, without fatigue, the work being effected with perfect regularity. This is an entirely new invention.

824 DUCEL, S. J., 26 *Faubourg Poissonnière, Paris*—Manufacturer.

Statues with pedestals. Animals. Vases and portions of balustrade with framing. Models for ornamenting buildings, gardens, fountains, churches, and tombs. Statues in iron casting, after the antique, cast at one melting.

825 DUJARDIN, LOUIS, 18 *Rue St. Sévérin, Paris*—Producer.

Typographic engraving on wood.
Framed engraving.

826 DUMONT-PETTRELLE, 12 *Rue Thévenot, Paris*—Producer.

Carving on wood—bouquet of flowers; garland of flowers and fruits, gilt and burnished by a process that resists humidity.

829 DURAND & BAL, 10 *Rue St. Polycarpe, Lyon (Rhône)*—Manufacturers.

Weaving-combs, with from 220 to 230 teeth in an inch.

830 ENFER, —, 32 *Rue de Malte, Paris*—Manufacturer.

Various blowing machines. Cylindrical bellows and light forges. Ventilators for forges and melting-houses. Chemical tables for laboratories, of a novel description. Bellows in metal, without friction; improved enamelled plates. Ventilators with wheels catching in endless screws.

831 EYMIEU & SON, *Saillans (Drôme)*—Producer.

Specimens of waste silk, and three fancy skeins.

832 FABREGUE-NOURY, SON, HARDOUIN, & Co., *Nimes*—Manufacturers.

Specimens of silk waste and carded waste silk.

833 FAMIN, PIERRE AUGUSTE, 13 *Rue de Berlin, Paris*—Sculptor.

Marble statue, "Billiard-player."

834 FAROCHON, EUGÈNE, 47 *and* 58 *Rue d'Enfer, Paris*—Sculptor.

Marble statue of a boy overloaded with fruit—"Grasp all, lose all."

835 FARREL, —, 27 *Rue de Caire, Paris*—Manufacturer. (Agent M. DE FONTAINE MOREAU, 4 *South Street, Finsbury.*)

Specimens of leaf-gold and leaf platinum.

836 FLACHERON-HAYARD, *Place d'Espagne, Bonne*—Designer; and at M. DUBAN'S, 17 *Rue de Lille, Paris*, Architect.

Seven views of Rome; and album, with various other views.

837 FOUCHER, —, 8 *Rue Salle-au-Comte, Paris*—Engineer.

A small machine for weaving lace slippers. Slippers, with and without soles, manufactured by the machine. Balls of lace used in the manufactory.

839 GAILLET-BARONNET, *Sommepy (Marne)*—Wool-spinner.

Wool spun by the hand, for the manufacture of veils, barège dresses, and other very light articles.

841 GATTIKER, GASPARD, 80 *Rue des Marais St. Martin, Paris*—Designer.

Designs for printed shawls. Dress, and samples of fabrics for dresses.

842 GAUDET DU FRESNE, 41 *Rue Richelieu, Paris*—Manufacturer.

Specimens of artificial leaves for the manufacture of artificial flowers, of the finest quality.

843 GAUME & Co., 4 *Rue Cassette, Paris*—Producer.

Books:—Works of St. John Chrysostom, St. Basil, St. Augustin, &c.

Two volumes coloured paper, sewn.

844 GAUTROT, sen., 60 *Rue St. Louis (au Marais)*—*Paris*—Manufacturer.

Musical instruments: horns, cornets, trumpets, clarions (chromatic), counter bombardons, ophicleides, trombones, &c.

845 GELLÉ, sen., & Co., 35 *Rue des Vieux Augustins, Paris*—Producer.

Perfumery: toilet soaps; hair dyes; bandoline; Parisian vegetable powder; milk of roses; almond paste.

846 GIBELIN & SON, *La Salle (Gard)*—Silk-spinners.

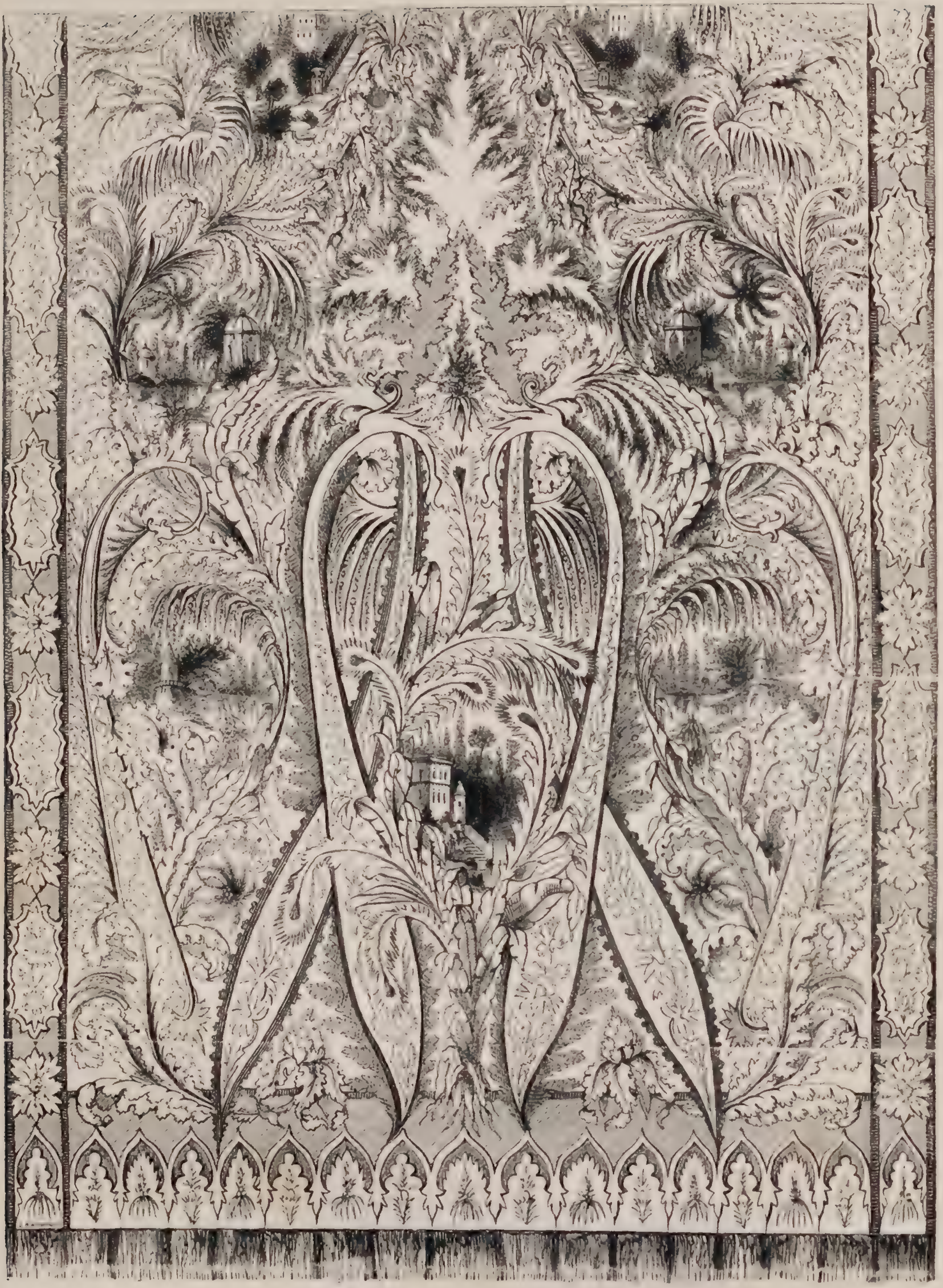
Specimens of raw silk, white and yellow.

848 GILLE, JEAN MARIE, 28 *Rue Paradis Poissonnière, Paris*—Manufacturer.

Statuettes, vases, flagons, decanters, and various other articles of white and ornamented porcelain.

849 GILLOT, F., 19 *Rue du Pont-aux-Choux, Paris*—Manufacturer.

Bronze and gilt clocks and candelabra, various compositions and groups with marble. Clock—"The Birth of Venus." Candelabra—"Hunting and Fishing." Clocks—"Nymph at the Spring." Candelabra—"Boys standing." Clock—style Louis XVI. Clock—"Innocence." Candelabra — "Boys sitting down." Pair of flagons. Group in bronze, "Hunting the Stag," on black marble. Pair of bronzed and gilt candelabra.



200. PATTERN OF A SHAWL. FRANCE.

850 **Giraud Brothers**, 38 *Rue du Fer-à-Moulin, Paris*—Tanners.

Morocco skins and moroccoed sheep-skins, for book-binding and portfolios, furniture, and boot and shoe-making.

851 **Goldenberg, G., & Co.**, *Zornhoff, near Saverne* (*Bas-Rhin*)—Manufacturers.

Various articles of hardware and edge-tools.

852 **Goube-Phérace**, *Douai* (*Nord*)—Manufacturer.

Wrought leather for cards, spinning-machines, and military accoutrements.

853 **Graillon, Pierre Adrien**, *Dieppe* (*Seine Inférieure*)—Producer.

Groups in terra cotta.

854 **Gratiot, Amédée**, 8 *Rue Vivienne, Paris*—Director of the Paper Mills at Essone.

Vegetable tissue papers, made from the fibres of the banana; letter papers, white and blue, wire woven by machinery; printed papers of various patterns and qualities; papers for flowers, called "Serpentines."

855 **Grimonprez & Co.**, *Roubaix* (*Nord*)—Manufacturers.

Woollen fabrics for dresses, shawls, and aprons. Woollen fabrics for hangings.

856 **Grossmann & Wagner**, 11 *Rue de Renard St. Sauveur, Paris*—Manufacturers.

French and American shoes, slippers, boots, and half boots, sheets, thread, pipes, lozenges, moulded and hollowed balls.

India-rubber surgical instruments: catheters, bougies, pessaries, nipples, sucking bottles, ear trumpets, urinals, bandages, varicose stockings, and cautery-plates.

Waterproof clothes, dresses, mattresses, clothes for ladies and gentlemen, brodkins, air cushions, clyster pipes, nurse's aprons, &c., braces, garters, bracelets, girdles.

Specimens of pure, manufactured, coloured, vulcanized, and dissolved India-rubber.

857 **Gruel, —**, 10 *Rue de la Concorde, Paris*—Producer.

Bound books:—Missal, mosaic volumes, Bibles, Prayer-books, &c.

858 **Guerre, sen.**, *Langres* (*Haute-Marne*)—Cutler.

Various samples of cutlery.

859 **Guesnu, —**, 16, *Rue Portefoin, and* 14 *Rue Aumaire, Paris*—Producer.

Lithographic printing. Embossed papers.

860 **Guilbert & Wateau**, *Rue St. Fiacre, Paris*—Manufacturers.

Woollen fabrics, woollen and silk mixtures, unbleached and dyed.

861 **Hamann, Emanuel Ferdinand**, 43 *Quai des Augustins, Paris*—Inventor.

A calculating planimeter.

862 **Hamm & Co.**, 6 *Place de l'Ecole de Médecine, Paris*—Surgical-instrument Maker.

Instruments for cataracts, amputations, trepanning, and lithotrity. Trusses, and various cutlery instruments, for surgery, &c.

863 **Harand, Edouard**, 15 *Rue de Choiseul, Paris*—Artificial Flower-maker.

Head-dresses, gown-trimming in roses, on ivy and rose ground.

864 **Harding, Cocker**, 6 *Rue de Metz, Lille* (*Nord*)—Manufacturer.

The model of a machine for combing flax, wool, and silk. A machine for combing wool, ready for work. Various articles connected with the spinning of flax, wool and silk, such as gills, cylindrical combs, &c.

865 **Hardouin, —**, 26 *Rue de Bréda, Paris*—Producer.

Ornaments in plastic carving: lustre roses; looking-glass frames.

866 **Haro, Etienne Francois**, 18 *Rue des Petits Augustins, Paris*—Manufacturer.

Canvas for historical painting; fine colours; varnish; specimen of new process for restoring pictures.

867 **Hartweck, Edouard**, 14 *Rue de Mail, Paris*—Designer.

Designs for long and square shawls.

One of these designs is represented in the accompanying Plate, 200.

868 **Hyppolite, Madame**, 21 *Rue de la Michodière, Paris*—Stay-maker.

Corsets of various descriptions.

869 **Hébert, Louis Antoine**, 252 *Rue St. Martin, Paris*—Manufacturer.

Varnish for boots and shoes.

870 **Heckel, sen., & Co.**, 14 *Rue des Capucins, Lyon* (*Rhône*)—Manufacturers.

Plain satins of different tints.

871 **Henri, Félix**, 47 *Rue du Vert Bois, Paris*—Jeweller.

Specimens of boxes, cups, brooches, pins, &c.; imitations of jewels.

872 **Hérault, —**, 22 *Rue Neuve St. Eustache, Paris*—Designer.

Set of designs for shawls.

873 **Hermann, George**, 92*Rue de Charenton, Paris*—Machine-maker.

Machine for grinding chocolate, colours, and pharmaceutical produce.

874 **Hermanowska, M.** *Troyes* (*Aube*)—Producer.

Stained glass, in the style of Louis XV.

875 **Hofer, Henri, & Co.**, *Kaysersberg* (*Haut-Rhin*) Cotton-spinners.

Spun cottons, bobbins, skeins, wefts, and warps.

876 **Holstein, Jean Paul**, *St. Etienne* (*Loire*)—Producer.

Terra cotta mouldings.

877 **Honoré, Ed.**, 6 *Boulevard Poissonnière, Paris*—Manufacturer.

Specimens of white and gilt porcelains.

878 **Houzeau, Etienne**, 33 *Rue de l'Arbre Sec, Paris.*

Specimen of paper for tracing, manufactured by a new process.

879 **Huber, César Eusèbe**, 29 *Rue Bergère, Paris*—Producer.

A door in the style of Louis XIV.; niche and pilaster of a figured freize, in renaissance style; caryatides, medallions, vases, and capitals.

880 **Huet, J.**, *Rue Pastourelle* (*Marais*) *Paris*—Manufacturer.

Trimming for purses; bead reticules; buckles, brooches, bracelets, and pins, &c.

881 **Hugues, Jean Joseph, & Son**, *Grasse (Var)*—Producers.

Bottles with various essences.

882 **Hulot, Anatole**, *Hotel des Monnaies, Paris*—Assistant Engraver to the Mint.

Proofs on paper of relievo engraved plates; bank notes; playing cards; stamps, &c.

883 **Hunzer, Jacques**, *Bischwiller (Bas-Rhin)*—Manufacturer.

Various kinds of drapery; black satin, black cloth, china satin, twilled amazon, &c.

884 **Hurtrel & Co.**, *Moulins, Lille (Nord)*—Manufacturers.

Specimen of a mode of riveting steam boilers, consisting of four strong iron plates manufactured by machinery, and firmly riveted by a riveting machine of new invention, by which the nails are riveted at a single blow. A piece of the specimen sawed in two to show the strength of the rivet, and the mode of joining the iron plates.

885 **Husson & Buthod**, 13 and 15, *Rue Grénetat, Paris*—Manufacturers.

Specimen of violins, guitars, barrel organs, and silk first-strings.

886 **Jacobs & Dupuis**, 32 *Rue de la Paix, Paris*—Shoemakers.

Samples of ladies' and children's boots and shoes.

887 **Jaudin, A.**, 15 *Rue de la Croix St. Martin, Paris*—Manufacturer.

Specimens of tinfoil and coloured spangles.

888 **Javet, C.**, 10 *Rue Geoffroy Marie, Paris*—Designer.

Designs for fabrics.

889 **Jeanselme, Joseph Pierre Francois**, 93 *Boulevard Beaumarchais, Paris.*

Cabinet-work: oak sideboard, dressing-room furniture, arm chairs, and chairs (Louis XV. style). A gilt console, richly carved in the style of Louis XV.; chairs, Etruscan style, inlaid with coral wood.

890 **Jolly-Leclerc**, 38 *Faubourg St. Antoine, Paris*—Cabinet-maker.

Carved wardrobe in rosewood, with a mirror and small étagère.

891 **Joly, Jn. Marie**, *St. Malo (Ile and Vilaine)*—Ropemaker.

Specimens of rope-work for shrouds.

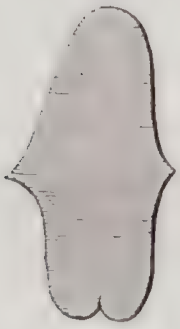
892 **Joly, Sisters**, 45 *Rue Neuve St. Augustin, Paris*—Manufacturer.

Fancy white satin, white drill, mohair, &c.
Stays; with trimmings of every kind.

893 **Jouvin, Mme. Xavier**, *Grenoble (Isére), and* 18 *Boulevard Poissonnière, Paris*—Manufacturer.

Skins for gloves; ready-made gloves; patent punches, or tools for cutting out gloves. These gloves are manufactured by an improved process. The punches for cutting them out are represented in figs. 1, 2, 3, 5, and 6 of the following cut. Fig. 4 shows the piece cut out.

2



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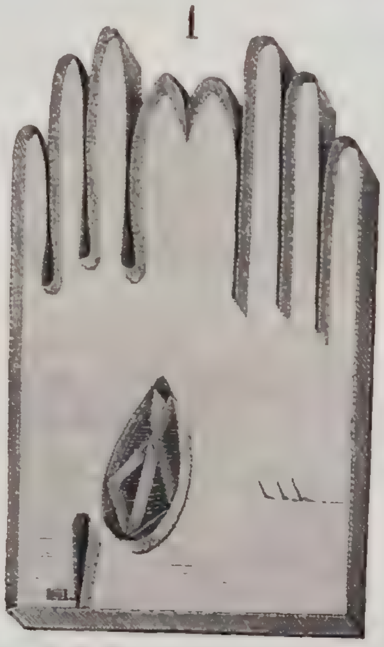

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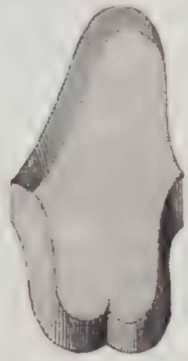

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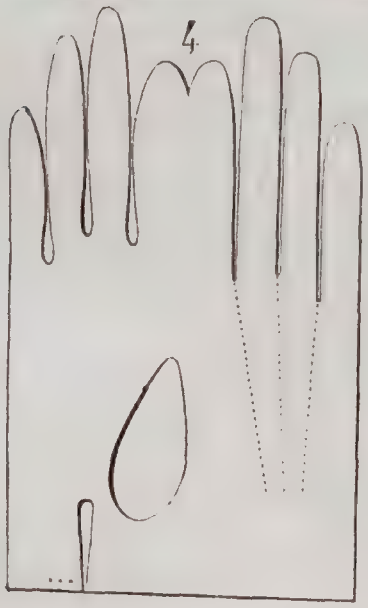


6

894 Köppelin, E., 17 *Quai Voltaire, Paris*—Lithographic Printer.

Specimens of lithographic printing.

The method employed by the exhibitor has been applied to the production of damask grounds, the traces of which are almost imperceptible to the naked eye. It is produced by a turning lathe on a steel plate.

Two engravings of the hemispheres, produced by the single impression of two plates, one of which gives the outlines, the names, and the waters, and the other, engraved by machinery, the shading or the sphericity. Large topographical map of the department of Meaux, about four feet by three, also produced at a single impression, by the transference to stone of six copper-plates of the map of France. This operation was effected with such accuracy that the most practiced eye cannot discover the marks of the places where they are joined.

895 Laboulaye, Chas., & Co., 30 *Rue de Madame, Paris*—Type-founder.

Typographic proof-sheets, and specimens of printing.

896 Lamort, Georgin, *Rethel* (*Ardennes*)—Manufacturer.

Specimens of unbleached and dyed merino fabrics.

897 Laude, Amedée, 19 *Rue de la Roquette, Paris*—Manufacturer.

Cast-iron bedstead ornamented with bronze, and an elastic spring.

898 Langevin & Co., *Laferté Aleps* (*Seine and Oise*)—Floss-silk Thread-spinner.

Floss and thrown silk of various qualities.

900 Laporte & Son, *Limoges* (*Haute-Vienne*)—Manufacturers.

Specimens of double-milled cloths, light grey, plain Marengo, &c.

901 Laroque & Jaquemet, *Bordeaux* (*Gironde*)—Manufacturers. (Agent, J. S. de Gaetan, 3 *Bow Lane, Cheapside.*)

Samples of manufactured hides; lamb-skins for gloves; sheep-skins for leather; white skins and skins dressed for chamois leather. Assortment of spun wool for knitting; woollen blankets of various qualities; short-napped carpets; carpets made in one piece, peculiarly adapted for large drawing-rooms, &c.

902 Laurent, Jn. Bte., 40 *Rue Rambuteau, Paris*—Lace-maker.

Specimens of twists, silk buttons, and other articles of trimmings.

903 Lauret Brothers, 19 *Rue des Mauvaises Paroles, Paris*—Hosiers. (Agents, Graetzer & Hermann, 3 *Huggin Lane, Wood Street.*)

Stockings, socks, gloves, and mittens of silk and cotton. Gloves, mittens, and neckerchiefs of silk. Thread gloves;

Scotch thread, silk poplin, cashmere, and various other articles.

905 Lazare & Lacroix, *Avignon* (*Vaucluse*)—Manufacturers. (Agent, L Foingninos, *Commercial Sale Rooms, Mincing Lane.*)

Thread, silk, and cotton handkerchiefs.

A sample of garancine.

906 Lebrun, Louis Jacob, 126 *Rue de Grenelle, St. Germain, Paris*—Bookbinder.

Specimens of bookbinding; Lewis's Sketches; Napoleon in Egypt, &c.

907 Lefebvre, Son, & Co., *Lille*—Manufacturers.

A glazed wardrobe in chestnut wood, inside of oak, and pannels of cedar wood.

908 Leistner, Gustave Louis, 48 *Rue de Chaillot, Paris*—Manufacturer.

Eau de Paris, a cosmetic intended as a substitute for Eau de Cologne, or other cosmetics. For internal use it is employed instead of Eau de Melisse de Carmes. Ten or twelve drops, in half a glass of sugar and water, are a dose. By adding a quarter of a bottle to a cold or hot bath, it makes a pleasant perfume. The Eau de Paris also takes out spots, by washing the injured material with it mixed with filtered water. A piece of cotton or linen, impregnated with it, preserves woollen stuffs from the moths, without occasioning any disagreeable smell.

Aromatic vinegar, a mixture of Eau de Paris and pure vinegar, for refreshing the air of apartments, by slightly sprinkling them with it.

Powder for the preservation of the teeth. This powder is free from acids and other substances likely to injure the enamel.

Elixir for preserving the teeth and gums. This dentifrice is prepared with fresh plants, and other substances adapted for the preservation of the teeth.

Odontalgic mastich. This chemical composition preserves the teeth by solidly filling them up, and of removing violent tooth-ache, proceeding from decay. In using it, the decayed tooth must be carefully cleaned out, and a small piece of lint or wool dipped in the composition, introduced by pressure.

909 Lemonnier & Co., 1 *Rue du Coq St. Honoré, Paris*—Jewellers.

A large portrait of Her Majesty Queen Victoria; several landscapes, tombs, bouquets, &c., in hair. An assortment of ornamental jewellery, with hair interspersed, and set in diamonds, pearls, &c.; including bracelets, rings, Leontine chains, Albert chains, &c., with a variety of other fancy articles.

910 Lépine, Fs. Ds., 19 *Rue des Vinaigriers, Paris*—Manufacturer.

Specimens of clasps for gloves.

912 Lhoest, Ci. Vr., 14 *Rue Pastourelle, Paris*—Manufacturer.

Various reduced designs in basso relievo, from sculpture, effected by a new and original mechanical process.

913 Lombard, —, 5 *Rue Thorigny, Paris*—Ornamental Carver.

Looking-glass and picture-frames, ornamented in every style. Bronze articles.

Furniture and console vessels.

A large assortment of ornamental moulds of all descriptions, for the use of carvers and gilders.

Clocks, candelabras, and fancy articles.

914 Lundy, Jules Auguste Victor, 2 *Rue Chapon, Paris*—Producer.

Paleographic designs. Manuscript of the fifteenth century on parchment, mediæval style.

915 Maehly, —, 69 *Rue du Rocher, Paris*—Inventor.

Plan of a machine for extracting oil from bituminous schist.

[It is a singular fact, which is now assuming much commercial prominence, that a considerable quantity of a fluid (hydrocarbon), commonly known as mineral oil, may be extracted in various ways from bituminous schist. By distillation this oil can generally be separated from the substance in which it occurs. The oil thus derived is applicable to combustion in lamps, for which it has been already extensively employed. The extraction of the oil, however, by the ordinary process of distillation, has been generally found to render it too costly for extensive use. The method exhibited, and which illustrates an improved plan of distilling the raw material, is as follows. The retorts used are of sheet-iron, and are placed horizontally in a reverberating furnace, and heated until they are red-hot, at which temperature they are uniformly kept by careful attention to the furnace. The lumps of bituminous schist are spread out uniformly on shelves of sheet-iron perforated with holes, and placed one above the other, so that a large surface of the schist is exposed to the heat. Under these circumstances a quantity of oil is disengaged, and condensed in a reservoir of cold water. A large quantity is thus extracted, greatly exceeding the ordinary yield of this material. Products of various kinds from the same material are exhibited in Class I. of the United Kingdom.—R. E.]

916 Meissonnier, —, 8 *Rue Meslay, Paris*—Manufacturer.

Specimens of colours and dyes.

917 Manson, Edouard, *Nantes* (*Loire-Inférieure*)—Manufacturer.

Specimens of japanned calf-leather.

918 Mantois, Mme. Elisa, *Rue du Pont de Fer, St. Sulpice, Paris*—Manufacturer.

Zinc white, prepared for painting in water colours and in oil, said to be of the finest white, of a moderate price, and in its use as easy as ceruse; that it has as much body as white lead, surpasses it in whiteness, and is unalterable, resisting the most powerful tests.

919 Mars, —, 20 *Rue de la Cerisaie, Paris*—Inventor.

A mechanical loading-machine, or an apparatus uniting with the scales the power of the screw-jack.

920 Marrat, François, *Angoulême* (*Charente*)—Manufacturer.

Flat and square iron refined by charcoal.
Cast-iron for the artillery.

921 Martel, Geoffray & Valensot, *Lyon, Rhône*—Manufacturers.

Specimens of fancy silk cravats and collars.

922 Martin de Lignac, —, *Mont Levade, Commune de St. Sulpice* (*Creuse*)—Agriculturist.

Boxes of concentrated milk. Patented in England. The milk, thus prepared, preserves its flavour and nutritive qualities for any length of time, and in any climate. By dissolving and boiling one-sixth of the article exhibited in five-sixths of water, an excellent milk is obtained.

923 Matifat, Charles Stanislas, 9 *Rue de la Perle, Paris*—Manufacturer.

Clocks, chandeliers, and various articles in bronze. Works of art of all kinds in bronze. Mirror in the style of Louis XV., with drawers and four branches; on the stand is a little group, representing the toilet of Venus. Statuette in bronze. "Susanna at the Bath." Large bronze vase in the Assyrian style, by G. Deaterle and Playmann, of exquisite workmanship and finish. (*Main Avenue.*)

Greek, Etruscan, and mediæval cups. Centre-piece in solid silver, weighing 78 lbs.

A silver vase, with figures. This vase is represented in the Plate 256.

Clock in carved ivory, in the style of Pompeii; on the top is a group representing a mother dancing a child on her knee, and in the centre a painting representing the past, present, and future. The accompanying Plate represents this clock.

A large wardrobe, Louis XIV. style, with bronze carvings.

A Moorish clock; another with foliage and birds; candelabra, cups, writing stands, &c., in bronze, with bells, hunting-knives, &c.

924 Mauzaize, Jean Noel, 4 *Impasse St. Michel, Chartres* (*Eure and Loire*)—Inventor.

Machine for isolating motion, applicable to flour-mills.

925 Menier & Co., 37 *Rue St. Croix de la Bretonnerie, Paris*—Manufacturers.

A variety of medicinal substances, reduced to impalpable powder.

Oats and barley deprived of their first pellicle, and known under the name of groats and of hulled barley.

Barley dressed by a mechanical process, known under the name of pearl barley, on account of its analogy of form with small pearls. The merit of these two products consists in the brightness and finish of the grain.

Various qualities of chocolate.

Pharmaceutical extracts obtained by steam.

926 Merlié, Lefevre, & Co., *Rope Factory, Havre*—Manufacturers.

Specimens of cables and cordage. The exhibitors manufacture yearly 1,320,000 lbs. of rope. The processes of tarring the yarn, and winding on the bobbins and reels, are peculiar. The machinery for cable-making works with the greatest regularity and economy, and produces the strongest ropes for shipping. Thus, in 35 minutes, by means of this apparatus, with the aid of six men only, the shroud of 13 inches in circumference, which he has exhibited among the specimens, was produced.

927 Mercier, —, 100 *Faubourg St. Antoine, Paris*—Manufacturer.

Drawing-room furniture. Cupboards with mirrors. A bed, chest of drawers, &c.

928 Meurisse, —, 1 *Rue du 29 Juillet, Paris*—Corset Maker.

Specimens of fancy corsets.

929 Milliau, —, jun., *Marseille* (*Bouches-du-Rhône*)—Soap-maker.

Various samples of soap.

930 Milon, Pierre Dominique, sen., 98 *Rue St. Honoré, Paris*—Manufacturer.

Specimens of silk stockings of all descriptions.

Trousers, swaddling cloths, and various articles of hosiery.

931 Morisot, —, 12 *Rue de la Cerisaie, Paris*—Manufacturer.

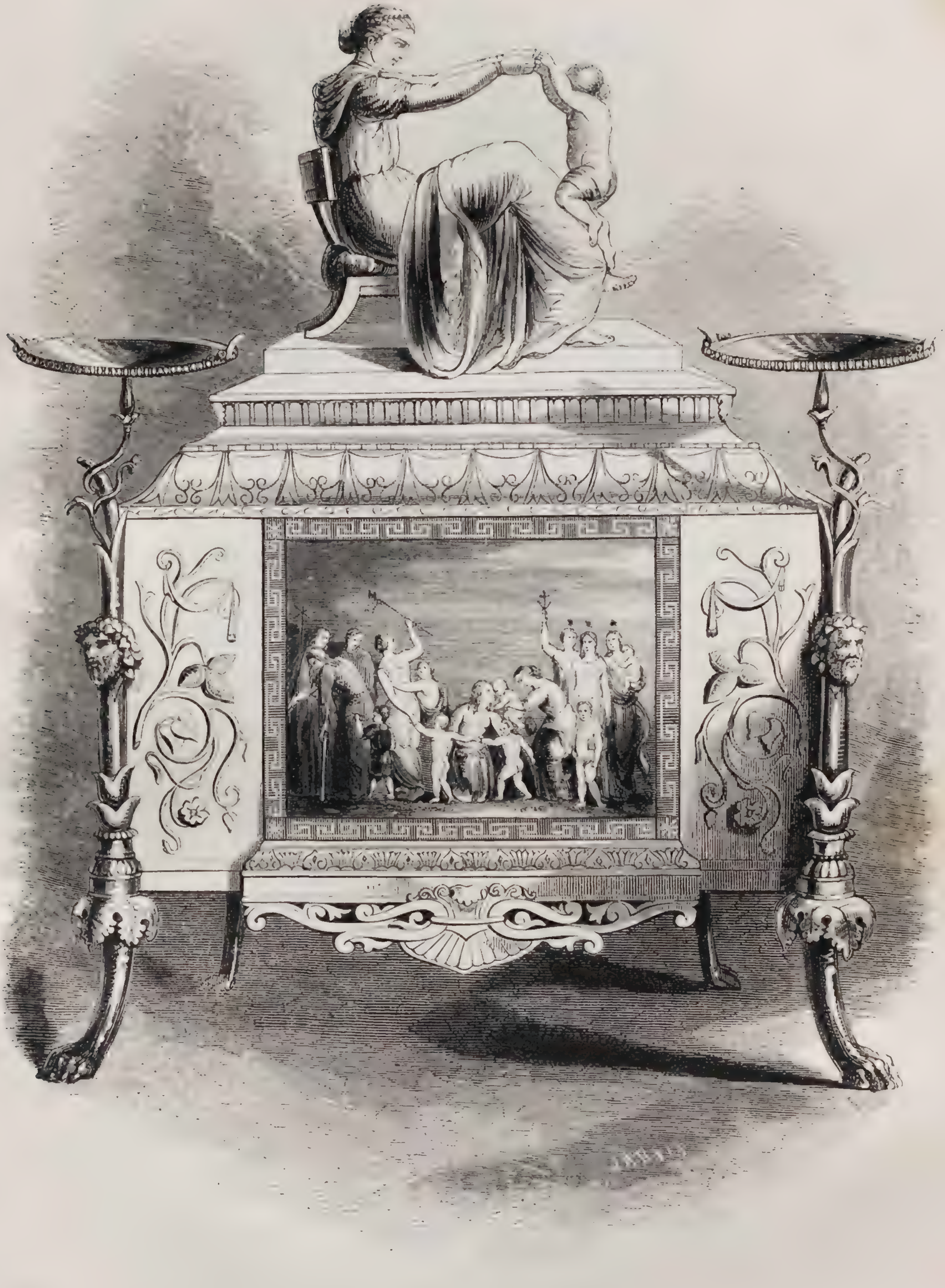
Works of art in bronze.
Andirons, tongs, tong-stands.
Vases and statuettes or groups.

932 Mottet, C., *Rue des Trois Bornes, Paris*—Producer.

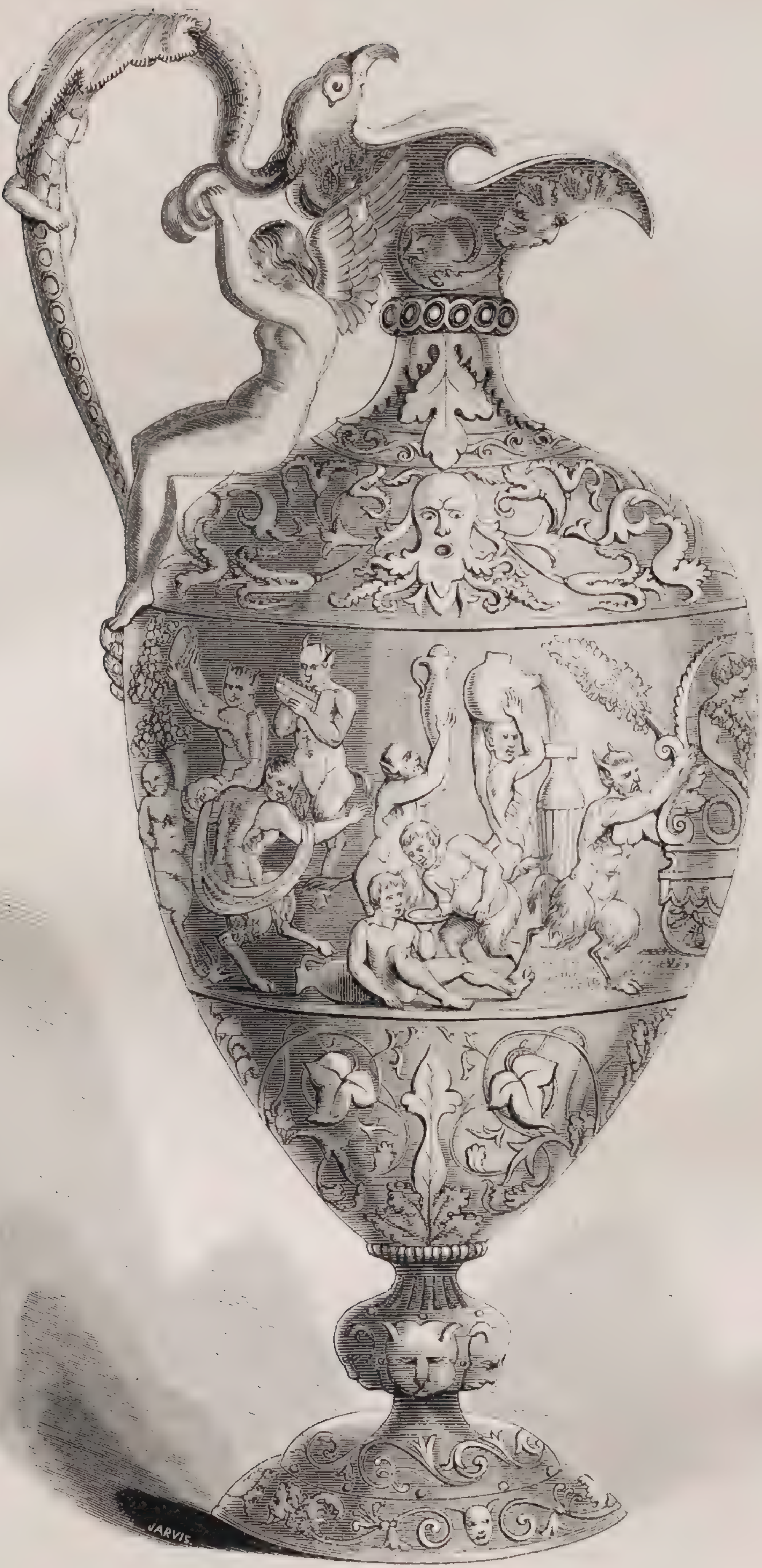
Orchil for dyeing and printing stuffs.

933 Moussillac, Amand, *La Réole, Gironde*—Producer.

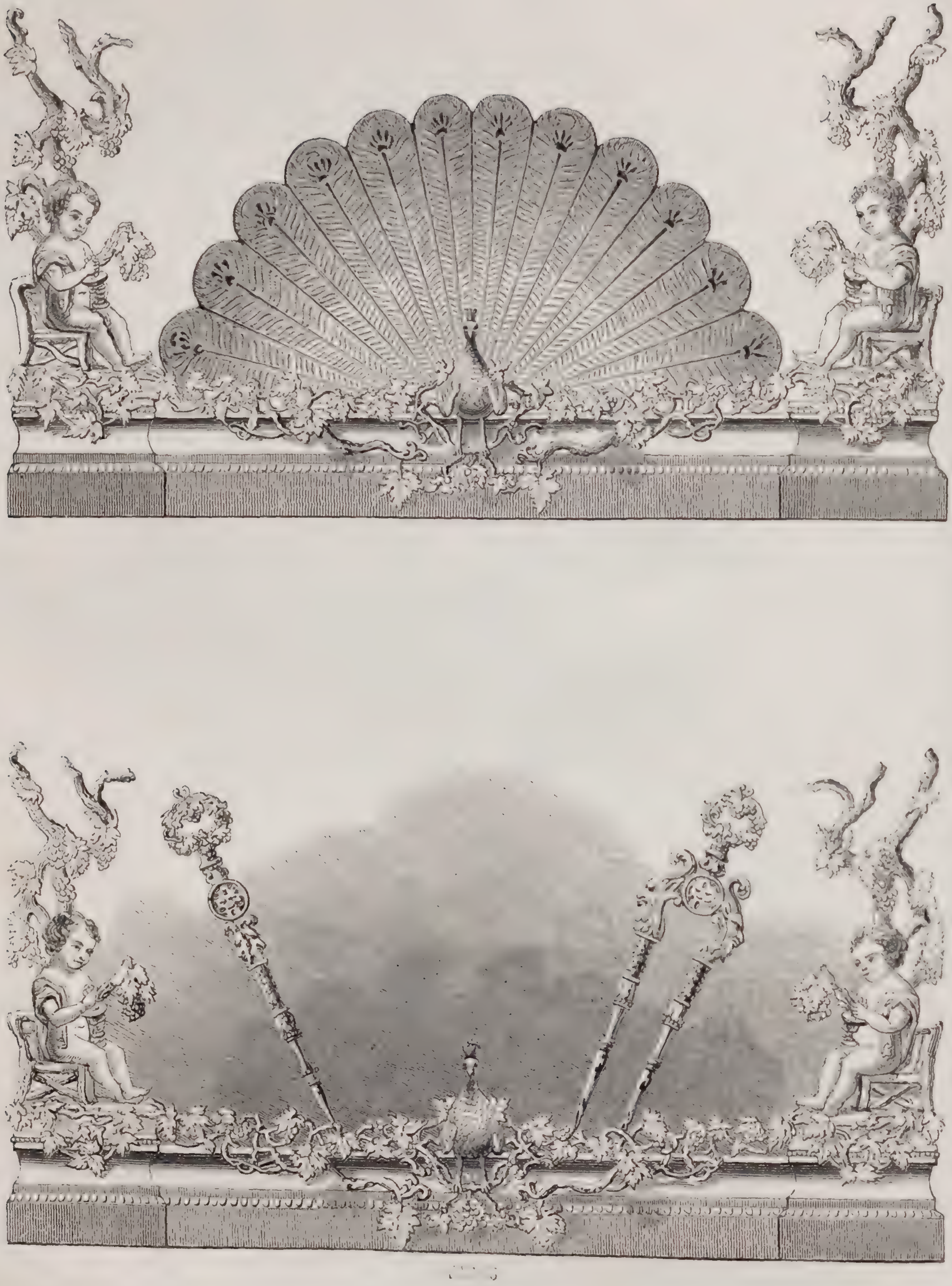
A twelve-circle mill of Acacia.



246. AN IVORY CABINET. M. MATIFAT, FRANCE.



SILVER VASE. M. MATIFAT. FRANCE.



FENDERS AND FIRE IMPLEMENTS. FRANCE.

934 Muel Wahl & Co., *Tusey Iron Works, near Vaucouleurs*—Producer. (Agent, A. Brochon, 112 *Rue du Faubourg St. Denis, Paris.*)

Ornaments for buildings, enclosures, gardens, gaslights. fountains, and public places.

Religious and funereal articles. Household articles of enamel.

Pieces in first and second state of fusion on designs or models.

935 Nilus, —, jun., *Graville, near Havre* (*Seine-Inférieure*)—Inventor.

A double pump for straining.

936 Noel, François, 14 *Chemin de Ronde de la Barrière des Vertus*—Manufacturer.

Stone apparatus for filtering water.

937 Nogarede, Jean Louis, *St. Jean-du-Gard*—Producer.

Skeins of raw silk.

938 Odent, Sons, & Co., *Courtalin* (*Seine and Marne*)—Manufacturers.

Papers made by machine and by hand.

939 Oger, J. L. M., 13 *Rue Culture, St. Catherine, Paris*—Manufacturer.

Household and toilet soaps and perfumery.

940 Pagnerre, —, 18 *Rue de Seine, Paris*—Bookseller and Publisher.

Thirty-two volumes of various kinds.

941 Paix de Beauvoy, C., *Seiches* (*Maine and Loire*)—Producer.

Hives with their appendages in wood and straw.

942 Palmer, Jean Laurent, 16 *Rue Montmorency, Paris*—Wire-drawer.

Various specimens of drawn wire, welding, and instrument for gauging.

943 Pape, Jean Henry, 19 *Rue des Bons Enfans, Paris*—Manufacturer.

Patent square and console pianofortes; square and hexagonal table pianofortes; grand pianoforte, with patent action and improved sounding board.

944 Parent, —, 33 *Rue des Arcis, Paris*—Manufacturer.

Various balances for mercantile and chemical purposes.

945 Paroissien, A., 12 *Rue St. Oppoline, Paris*—Manufacturer.

Specimens of wax leaves. Ladies' head-dresses.

946 Paublan, Jean, 366 *Rue St. Honoré, Paris*—Locksmith and Machine-maker.

Safes and locks on various systems. Specimens of iron chests for security against theft and fire.

947 Peigne, Victor Julien, *Nort* (*Loire-Inférieure*)—Inventor.

A gun of new invention. This weapon primes itself by a mechanical contrivance, with capsule placed inside.

948 Pellier Brothers, *Mans* (*Sarthe*)—Manufacturers.

Bottles and boxes of preserved meat.

Knives for opening the boxes.

949 Peltereau, Fred., jun., *Château Renaud* (*Indre and Loire*)—Manufacturer.

Specimens of various kinds of leather.

950 Peneau, Joseph, *La Musse, near Nantes* (*Loire-Inférieure*)—Manufacturer.

Boxes of truffled game, sardines, green pease, and various preserved meats; bottles of fruits.

951 Perot, Gabriel Jean, sen., 8 *Rue Mandar, Paris*—Engraver.

Specimens of engraving, and inlaying on steel.

952 Perrot, Petit & Co., 12 *Rue de la Bourse, Paris*—Manufacturers.

Artificial flowers; fancy feathers for dress; gold, silver, and pearl embroidery, &c.

953 Petitcolin, Jules, 2 *Place Dauphine, Paris*—Engraver.

Proofs of engravings on copper-plates by machinery.

954 Petithomme, L. A., 283 *Rue St. Jacques, Paris*—Engineer and Founder.

Chime of four bells, exemplifying the exhibitor's patent system of suspension for bells.

955 Peyron, Silvain, *Rumengol, near Brest* (*Finistère*)—Manufacturer.

Specimens of beech sieve-hoops, sawn and bent by steam machinery.

956 Philippe & Canaud, *Ville-en-bois, Nantes* (*Loire-Inférieure*)—Manufacturers.

Bottles and flagons, containing preserved food, meats, vegetables, fish, &c.

957 Pieron, —, 13 *Rue des Enfans Rouges, Paris*—Manufacturer.

Specimens of fenders, with shovels and tongs, gilt and oxidised, or gilt and bronzed. Patent screen. This screen attached to the fender, with the fire implements, is represented in the accompanying Plate 239.

958 Pierret, Joseph Benoit, 29 *Rue de Breda, Paris*—Manufacturer.

A rotatory steam engine of 10-horse power.

959 Pitet, —, sen., 305 *Rue St. Martin, Paris*—Brush-maker.

Samples of brushes for painting.

960 Pitoux, Victor, 24 *Rue Parée, au Marais, Paris*—Manufacturer.

Gelatine flowers, ornaments and bouquets. Gelatine cylinders of various colours.

961 Pöelman, Isidore, *Moulins-lez-Lille*, Manufacturer. (Agent, Mr. Ganthier-Bouchard, *Rue du Cloître, St. Méry, Paris.*)

Specimens of ceruse, or white-lead.

962 Poilleu Brothers, *Brest* (*Finistère*)—Producer.

Body of a cenotaph of granite.

[The material of which this cenotaph is composed, is not granite, but a kind of greenstone-trap, exceedingly tough, and difficult to work. It is obtained from the igneous rocks of the north-western part of France, and is probably used in the absence of a better material.—D. T. A.]

963 Poirier, Laurent, 33 *Rue du Faubourg St. Martin, Paris*—Machine-maker.

Copying-presses; presses for sealing letters; autographic presses; stamping machine; travelling press; press for laboratories. Registered and patented.

964 Potonié, 5 *Rue Neuve St. François, Paris*—Manufacturer.

Clocks of various descriptions and patterns, in wood, china, marble, bronze, and other materials; carriage clocks; clocks with mechanical singing birds. Clock, with subject, "Great Britain protecting Art and Industry."

965 Poulat, A., 6 *Cours de Brosses, à la Guillotière, Lyon* (*Rhône*)—Manufacturer.

Brass drawing-plates, with holes set in rubies, for drawing all kinds of metals into wires.

966 Poullot, —, 35 *Rue St. Louis* (*Marais*), *Paris* —Optician.

Specimens of eye-glasses; nose pinchers, monk-faces, spectacles, &c.

967 Pouyer, *Rouen* (*Seine-Inférieure*)—Mechanist.

Apparatus, available for a 40-horse power, enabling any number of movers to be connected or disconnected at pleasure.

968 Pecqueur, —, 11 *Rue Neuve Popincourt, Paris*—Engineer. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Specimen of fishing-net, made by a machine, one of which was made for Grundy & Co., of Bridport.

969 Proutat, Mutros & Thomeret, *Arnay-le-Duc* (*Côte-d'Or*)—Manufacturers.

Samples of tools and files.

970 Provancher, Bertrand, *Place du Château Rouge, Montmartre*—Manufacturer.

A China plate, with lithographic application, representing Queen Victoria and the Royal Family in one of the galleries of the Palace.

971 Ragot, Jules Felix, 39 *Boulevard St. Martin, Paris*—Designer.

Design for a white lace counterpane, Brussels application, without trimmings.

972 Ragot-Mayeux, *Reims* (*Marne*)—Manufacturer.

Unbleached and dyed merino fabrics, of different qualities.

973 Randoing, John, *Abbeville* (*Somme*)—Manufacturer.

Fine cloths: fine beaver, a variety of cashmeres, summer satin, &c., dyed in every variety of shade.

The royal manufactory of Abbeville was established by Colbert, on a very extensive scale, and has ever since been remarkable for the excellence of its manufactures.

974 Rapp, C. F., 21 *Rue Feydeau, Paris*—Bootmaker.

Various descriptions of shoes and boots for men and women.

975 Rebert, Chrétien, 25 *Place du Dome, Strasbourg* (*Bas-Rhin*)—Inventor.

Various patterns of door fastenings, with single wires or with spiral rods. Patented.

976 Rédelix, Cyprien Hubert, 357 *Rue St. Denis, Paris*—Manufacturer.

Specimens of flower-makers' tools.

977 Rémond, N., *Rue du Foin St. Jacques, Paris*—Producer.

Wooden frames, containing proofs coloured, but not touched up with a pencil, and a painted signboard.

978 Renard, —, 28 *Rue des Gravilliers, Paris*—Cutler.

Tools for all kinds of engraving.

979 Renaud, —, 6 *Rue St. Foix, Paris*—Manufacturer.

Specimens of metal foundry of all descriptions.

980 Richard Brothers, *St. Chamont* (*Loire*)—Manufacturers.

Specimens of silk gimp, or trimming.

981 Renard & Son, *Fresnes, near Condé* (*Nord*)—Manufacturers.

Window-glasses—white, half-white, and common; and fluted glass. The exhibitors have six melting furnaces, producing monthly about 484,000 English square feet of glass.

982 Renodier & Son, *St. Etienne* (*Loire*)—Cutlers.

Steel-bladed knives, called *Hustaches*. The blades of steel are from the department of Isère, the handles are of box-wood, coloured and painted by hand.

983 Repeyre, Sabin, 9 *Rue des Fossés Montmartre, Paris*—Manufacturer.

Specimens of figured woollen shawls and scarfs.

984 Reydor Brothers & Colin, 17 *Rue Jean-Robert, Paris*—Manufacturers.

Various systems of clocks.

Regulators and kitchen-jacks.

985 Riby, Pierre, *Angers* (*Maine and Loire*).

Mill-stones for grinding corn.

986 Ricroch, N., & Co., *Limoges* (*Haute-Vienne*), (China Workmen Society).

A variety of articles—white china table service.

987 Rivaud, Gustave, *Petit Rochefort* (*Charente*)—Producer.

Fleeces of superfine merino-wool.

988 Robaut, L., *Douai* (*Nord*)—Tanner.

Tanned and curried leather for cards and military accoutrements.

A square cow's hide, for cotton cards. Plates for wool and cotton cards. Plate for cotton card, calf-skin. Bands for wool card. Band for cotton card. A square cow-hide, curried for military accoutrements. Calf-skin polished, for shoemakers. Calf-skin roller, for spinning. Pair of boot-legs, cow leather, for the military. The same in calf. A side of black leather, ox-hide, for harness. Manufactured skins for hydraulic presses. Small leather skins for hat manufacturers.

989 Galland, Robert, *Pont-Faverger* (*Marne*)—Manufacturer.

Specimens of Merino fabrics unbleached and dyed.

990 Roche & Dime, 1 *Place Romarin, Lyons* (*Rhône*). Manufacturers.

Three fancy silk shawls.

991 Rocher, Michel, *Nantes* (*Loire Inférieure*)—Inventor.

An apparatus for distillation. Patented in England.

Submarine condenser that cannot be heated.

992 Rodel & Son, *Bordeaux* (*Gironde*)—Manufacturers.

Specimens of preserved food.

993 Roth, G. C., *Strasbourg* (*Bas-Rhin*)—Manufacturers.

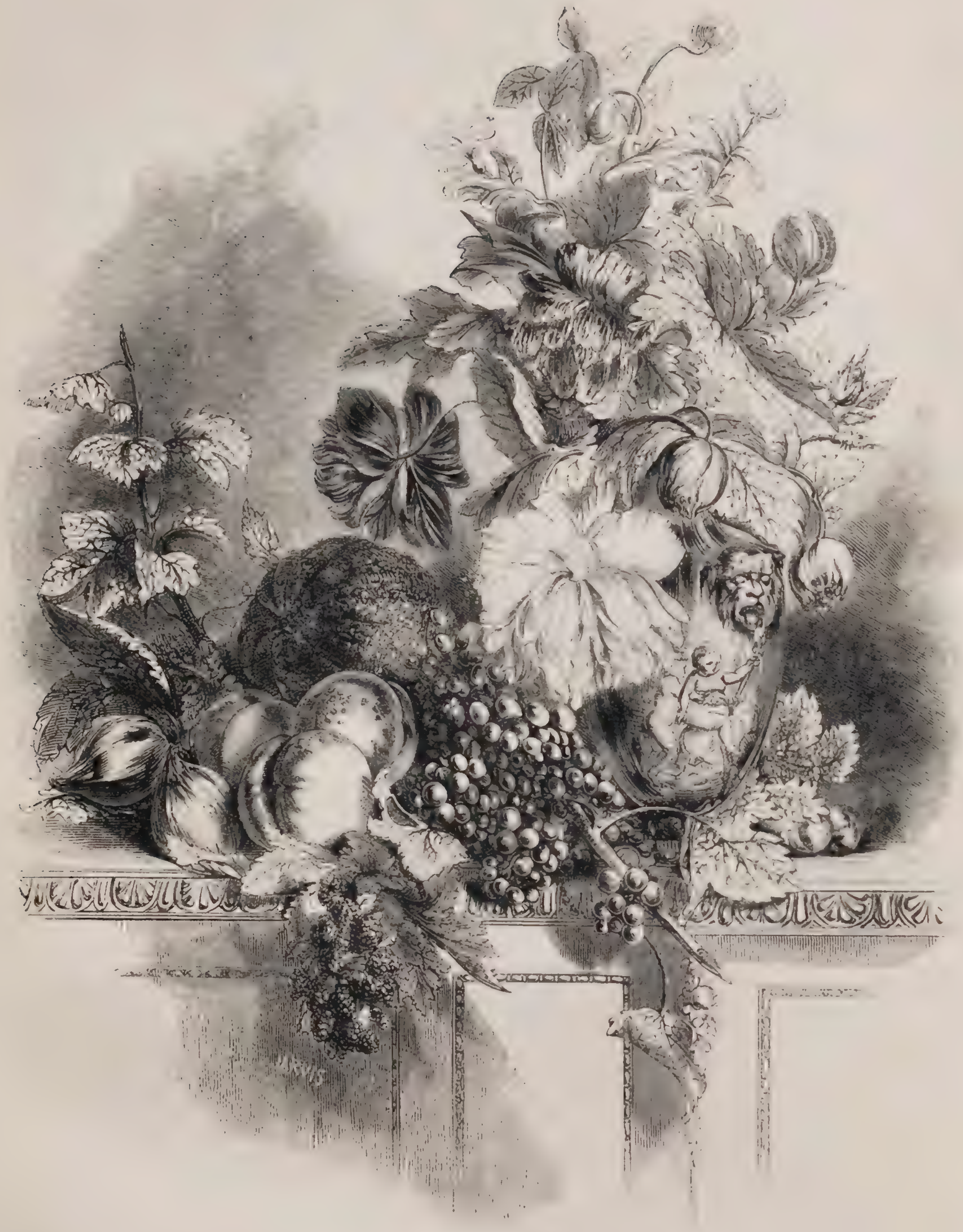
Brass and wooden musical instruments.

994 Rouchier, F., & Son, *Ruffec* (*Charente*)—Manufacturers.

Specimens of Rheims biscuits, and preserved green pease.

995 Roux & Fortin, 21 *Rue d'Anjou* (*Marais*) *Paris, and* 9 *Sackville Street, Piccadilly, London*—Manufacturers.

New patent revolving castors, seven sets of four each, numbered 30, 40, 50, 60, 70, 160, and 170. These castors, constructed on a new principle, are exhibited for their strength, durability and form; their novelty consists in



174. OIL-COLOUR PAINTING. M. SAINT JEAN, LYONS.

a revolving ball, which turns in any direction required, and which, being fixed perpendicularly on an article of furniture, is capable of supporting the entire weight, without much friction or oscillation.

996 Saint-Jean, —, 2 *Quai Fulchiron, Lyons* (*Rhône*) —Painter.

Pictures of flowers and fruits. A virgin among roses. Bouquet of wild flowers. Fruits and flowers. Flowers hidden under a cabbage. Camelias in a vase. Flowers and fruits. One of these pictures is represented in the Plate 174.

[The works of this exhibitor have had a happy influence on the designs of the silk manufacturers of Lyons, and his pictures are exhibited as models.]

997 Savaresse, Henri, 30 *Avenue St. Charles, Grenelle* (*Seine*)—Manufacturer.

Improved treble strings and musical instruments.

Specimen of an article proposed for the manufacture of artificial orange flowers.

998 Savaresse, —, jun., *Grenelle, near Paris* (*Seine*) —Manufacturer.

Harmonic-strings in silk and catgut, with flowers of the same materials trimmed in lace, for harps, violins, violoncellos, and guitars.

999 Schiertz, Jules Gustave, 27 *Rue de la Huchette, Paris*—Cabinet-maker.

Apparatus and stands for daguerreotyping.

Stands for astronomical telescopes.

1000 Schlumberger, Gaspard, & Co., *Mulhouse* (*Haut-Rhin*)—Manufacturers.

Woollen and silk stuffs for furniture, woven by Jacquard machines.

1001 Schneider & Legrand, *Sédan* (*Ardennes*)—Inventors.

A shearing-machine (longitudinal) for cutting the nap off woollen fabrics.

1002 Schneider Brothers, 137 *Rue Montmartre, Paris*—Merchants.

Silk ribbons manufactured by various houses at St. Etienne (Loire).

1003 Schwartz & Huguenin, *Mulhouse* (*Haut-Rhin*) —Manufacturers. Depôt, F. & C. Muller, 3 *Rue de Sentier, Paris.* (Agent in London, Mr. Sauphar, 9 *Southampton Street, Holborn.*)

Specimens of printed furniture in cotton and wool.

1004 Schwartz, Trapp, & Co., *Mulhouse* (*Haut-Rhin*)—Wool-spinners.

Machine-combed woollen threads.

1005 Scrive Brothers, *Lille* (*Nord*)—Manufacturers.

Specimens of plates and card-straps for carding cotton, wool, and flax.

1006 Scrive Brothers & Danser, J., *Marguette and Halhein, near Lille* (*Nord*)—Manufacturers.

Linen fabrics. Various kinds of cloth. Ticks woven by power-looms.

1007 Scrive Brothers, *Lille* (*Nord*)—Flax-spinners.

Flax and flax-tow thread, manufactured by new mechanical processes.

1008 Seguin, Joseph, *Puy* (*Haut-Loire*); and 40 *Rue des Jeuneurs, Paris*—Manufacturer.

Specimens of silk lace, or novelties in silk made with bobbins.

1009 Seib, J. A., *Strasbourg* (*Bas-Rhin*)—Manufacturer.

Glazed cloths for floors. Embroidered articles, cloaks, &c., of various qualities.

1010 Sengenwald, —, *Strasbourg* (*Bas-Rhin*)—Producer.

Samples of madder from Alsatia.

1011 Sentis, Son, & Co., *Rheims* (*Marne*)—Wool-spinners.

Samples of woollen yarn, fossets, taps, &c.

1012 Servais, Jn. Bte., 15 *Rue St. Louis en l'Ile, Paris*—Manufacturer.

Specimens of gilt frames. Rustic ornaments of sculpture.

1013 Signoret-Rochas, Paul, *Rue du Chemin Neuf, Vienne* (*Isère*)—Manufacturer.

Woollen cloths of a new description; black cloths; grey twills, &c.

1014 Simon, Emile, *Strasbourg* (*Haut-Rhin*)—Manufacturer.

Black and coloured prints (washed). Lithographic aquarelle.

1015 Simon, Paul, 36 *Boulevard du Temple, Paris*—Producer.

A group: specimen of plastic art.

1016 Simon, J., 4 *Rue Vide Gousset, Place des Victoires, Paris*—Manufacturer.

Specimens of marble clocks, goblets, inkstands, chimney-pieces, &c.

1017 Sirot, —, *Valenciennes* (*Nord*)—Nail-maker.

Samples of nails and pegs for shoes in copper and steel.

1018 Vieille Montagne Joint Stock Company—Mr. A. Guynemer, sen., Director, 19 *Rue Richer, Paris.*

Sheets of zinc, of various thicknesses and dimensions. Perforated sheets. Mouldings of various designs and forms. Specimens of zinc roofing, plane, Italian and corrugated: specimens of tubes, gutters, and pipes, balconies, glass frames, and zinc bath with polished border; zinc boxes and barrels for preserving gunpowder; zinc cylinders for spinning machinery; sugar moulds and jars; nails; statues; church ornaments and vases.

Colossal statue of Queen Victoria on her throne, in all the attributes of royalty, 18 feet high; sculptures by Dantan, sen., cast in zinc by Paillard of Paris.

1019 Linen Joint-Stock Company—MM. Beuezet, Radiquet, Homon, Gouvy, & Leroux, Managers, *Landernau* (*Finistère*)—Manufacturer.

Specimens of sail-cloth for the navy and merchant service, and yarn dry-spun.

1020 Sorel, —, *Grenelle* (*Seine*). Depôt, 6 *Rue de Lancry, Paris*—Manufacturer.

Various specimens of white of zinc dessicative. A picture painted partly with white of zinc, and partly with white lead or ceruse. Patented in England.

1021 Stamin & Co., *Thann* (*Haut-Rhin*)—Manufacturers.

A mule for cotton spinning, with 120 spindles, with double presser flies.

1022 Suser, Henri, *Nantes*, and *La Morinière* (*Loire-Inférieure*)—Tanner and Boot-maker.

Tanned leather. Curried leather. Boots and shoes.

1023 Susse Brothers, 31 *Place de la Bourse, Paris* —Manufacturers.

Candelabras. Statues in bronze and marble. Various clocks and bronzes. Statuettes. Fancy articles.

1024 Taborin, Pierre François, 62 *Rue Amelot, Paris*—Manufacturer.

Various kinds of files.

1025 Tailbouis, Verdier, & Co., 17 *Rue des Mauvaises Paroles, Paris*—Manufacturers.

New kind of gloves, in silk, wool, and thread. Fancy articles in woollen and silk.

1026 Tailfer & Co., *Needle Mills, Laigle* (*Orne*)—Manufacturers. (Agent, C. Landour, 2 *Crown Place, Westbourne Terrace, Hyde Park.*)

Specimens of patent pins, needles, and fasteners, galvanized by Roseleur and Boucher's newly-invented electro-chemical process.

1027 Talabot, Leon, & Co., *Toulouse* (*Haute-Garonne*), and *Sant-du-Tarn, near Albi* (*Tarn*)— Manufacturers.

Various kinds of scythes, cleavers, and files.

1028 Talbot Brothers, *Menneton Salon, near Bourges* (*Cher*)—Manufacturers.

Model of a plough with fore carriage and iron shafts, shifting coulters, pressure-screw and a moveable slide to regulate the breadth of the furrows.

1029 Tautenstein & Cordel, 90 *Rue de la Harpe, Paris*—Printers.

Specimens of music, printed in types, and of lithographed printed volumes.

1030 Teillard, C. M., 25 & 27 *Rue Nationale, Lyons* (*Rhône*)—Manufacturer.

Specimens of silk, mohair, velvet, taffeta, and other stuffs.

1031 Teissier du Cros, L. & E., *Vallerangue* (*Gard*) Silk-throwsters.

Various samples of raw and thrown silk.

[This establishment claims the first application in France of steam-power to the production of thrown silk. Several of the specimens exhibited illustrate a new method of winding silk from as many as twenty, thirty, and forty-eight cocoons. Great difficulties are generally experienced in winding silk off more than twelve. In this instance, however, it has been rendered possible, by a simple apparatus invented by the exhibitors, to wind off from as many as sixty cocoons at once. The specimens exhibited are adapted to different purposes, some for the manufactures of blondes, laces, tulle, &c.; others for ribbons; others for satins. The silk mill is a large one, and gives employment to about three hundred operatives.]

1032 Terrier, Jos., & Co., *Suresnes* (*Seine*)—Dyers and Finishers.

Specimens of various woollen stuffs; satin; damask merino muslin de laine, dyed and finished.

1033 Texier, Theophile, jun., *Niort* (*Deux Sèvres*) —Glover.

Specimens of gloves of deer, chamois, castor, and sheep skins.

1034 Texier, Victor, 350 *Rue St. Honoré, Paris*—Publisher.

Specimen of books, bound and stitched. Museum of ancient and modern sculpture.

1035 Theil, Joseph, *St. Lucien, near Epernon* (*Eure and Loire*)—Manufacturer.

Millstones, especially for grinding all dry grains, such as those from America.

1036 Thevenot, Etienne, *Clermont-Ferrand* (*Puy de Dôme*)—Producer.

Patterns of painted glass for windows, style of the 15th century. Two painted glass windows, executed after the cartoons of the exhibitors, by his pupils; forming part of a very large window, 23 feet high and 15 wide, which was made in 1848, for a church in Calcutta.

1037 Thibert & Adam, *Metz* (*Moselle*). Depôt, 10 *Rue du Grand Chantier, Paris*—Manufacturers and Dyers.

Specimens of silk plush used in the manufacture of hats.

1038 Thierry, Jean, *Rue Bat d'Argent, Hotel des Négociants, Lyons* (*Rhône*)—Manufacturer.

A frame, containing nine heliographic pictures.

1040 Thomas Brothers, *Avignon* (*Vaucluse*). Depôt, *Lyons* (*Rhône*)—Manufacturers.

Specimens of florences from Avignon, various shades.

1041 Thorel, Henri, *Ruffec* (*Charente*), *Hotel des Postes*—Manufacturer.

Specimens of truffled ducks' livers; and of truffled red partridges.

1042 Tiffereau, Theodore, 10 *Rue de Vaugirard, Paris*—Watchmaker.

Hydraulic clock, patented in France and England. This time-piece marks the hours and minutes on an ordinary dial, and its perfect regularity is insured by a floating pendulum. Two quarts of water suffice to keep the clock going for thirty hours, and the only caution necessary, is to pour the water from the lower vessel into the upper one at the exact moment, without leaving time for the clock to stop; by keeping up a constant flow of water, the clock will never require winding up.

1043 Toulza, F., *St. Etienne* (*Loire*)—Manufacturer.

Specimens of wrought iron. Hardware.
Shoemakers' tools, and small cleavers, &c.

1044 Travers, Pierre Louis, 146 *Faubourg Poissonnière, Paris*—Producer.

A model of the upper part of the Custom-house. A model of the moveable cupola of the observatory. Various models of hothouses.

1045 Truchy, E., 18 *Rue du Petit Lion, St. Sauveur, Paris*—Jeweller.

Artificial pearls, equal in appearance to real pearls. Imitation pearls for ladies' head dresses and ball robes.

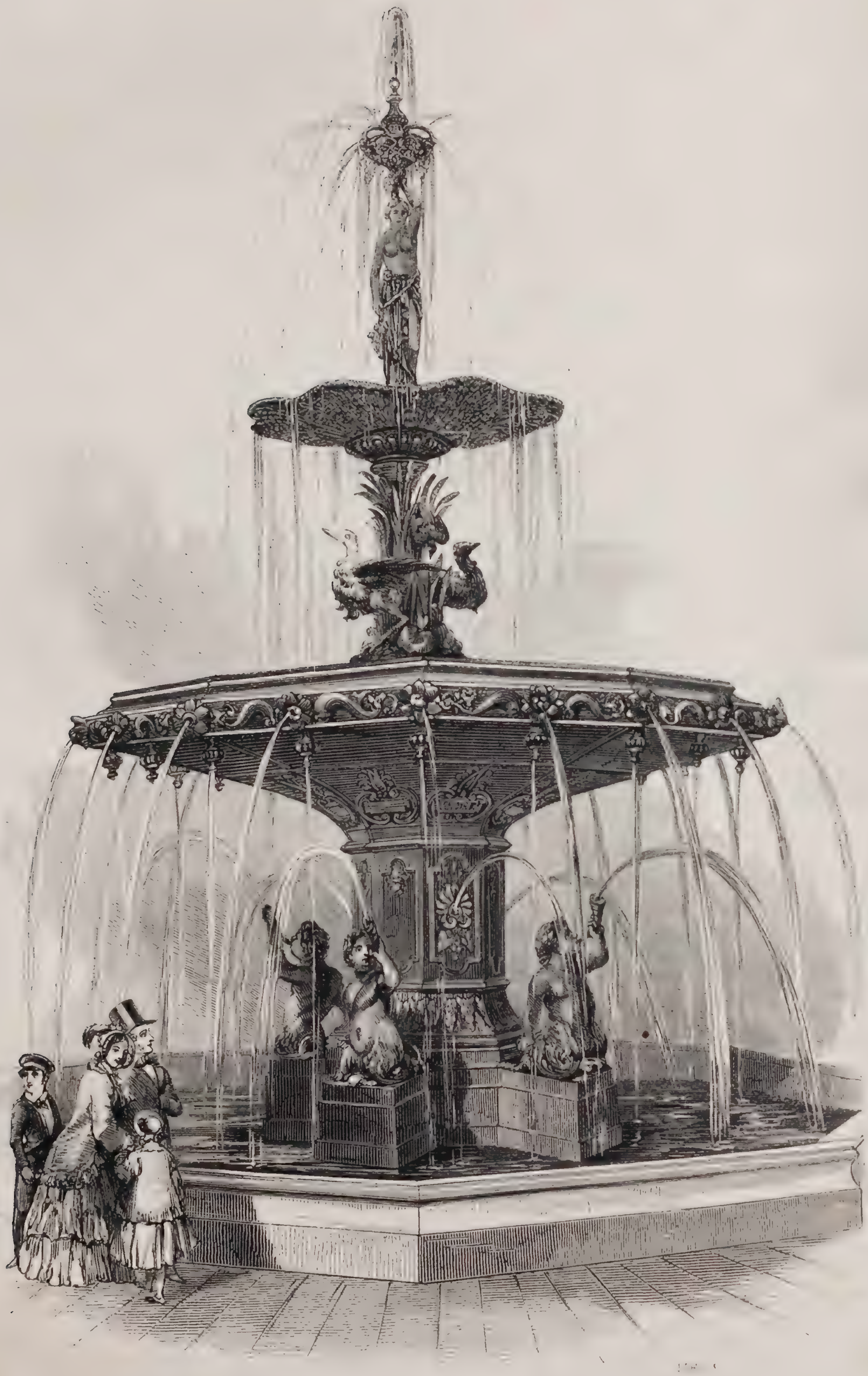
[Imitation pearls are usually made of thin glass spheroids, covered on the inside with the scales of a small freshwater fish, which are first washed in ammoniacal water, in which they are retained long enough to become soft, flexible, and adhesive. The glass must be bluish, opalescent, and very thin, containing but little potash and oxide of lead, and the manufacture involves much delicacy of manipulation.—D. T. A.]

1046 Turpin, France Antoine, 28 *Rue Richelieu, Paris*—Manufacturer.

Chocolate, in lozenges and various other forms.

1047 Viel, —, Chemist, *Tours* (*Indre and Loire*)—Inventor.

Rotatory pill-making machine.



A BRONZED IRON FOUNTAIN. CAST BY M. ANDRE, OF VAL D'ORNE. FRANCE.

1048 Warmont, V. E., *Neuilly sur Seine*—Dyer.

Warp prepared for weaving. Woollen scarfs. Woollen yarn.

1049 Chamber of Commerce of Avignon, *Vaucluse*—Producer.

Three samples of madder roots, yellow, red, and deep red: six flasks of madder powder; and two flasks of extract of madder.

1050 Alcan, Michel, 38 *Rue d'Enghien, Paris; Silk Spinning Mill* (*Nimes*).

Raw silks produced from French and Calcutta silk-pods, and reared in the cold. An assortment of plates made by a new method of cutting. Patented in England.

1051 Alluaud, —, sen., *Limoges* (*Haute-Vienne*)—Manufacturer.

Various specimens of china for the table and the toilet.

1052 Aucoc, —, 6 *Rue de la Paix, Paris*—Manufacturer.

Ladies' and gentlemen's dressing-cases. Large toilet service in embossed silver. Dressing-case, composed of more than eighty pieces, in silver, gilt, chased and engraved; the case of ebony inlaid with flowers in marquetrie. Dressing-case, ornamented with the arms of England.

1053 André, J. P. Victor, *Val d'Osme* (*Haute-Marne*), and 14 *Rue Neuve, Ménilmontant, Paris*—Manufacturer.

Cast-iron bedsteads; grates for chimneys; groups of animals; candelabra; statues and vases.

A bronzed iron fountain with figures of tritons, &c. This fountain is represented in the annexed Plate 205.

1054 André, Jean, & Count de Bronno Bronski, *Château de St. Selve, Arrondissement de Bordeaux, Gironde*—Producers.

Two ploughs, on the system of André Jean; with one or two coulters, one sowing machine, and one harrow.

1055 Aubanel, —, 43 *Rue de Trévise, Paris*—Manufacturer.

Bronze and marble chimney-piece.

Gilt and carved folding iron door, with moulding, pediment, carved wood panels, and painted porcelain centres, 21 feet 4 inches high by 8 feet 2 inches wide. Designed and executed by the exhibitor.

1058 Aubeux, —, 6 *Rue et Impasse de l'Orillon, Paris*—Manufacturer.

Kerseymere stuffs for waistcoats, a fashionable novelty.

1059 Auclerc & Ledoux, *au Fidèle Berger, Rue des Lombards, Paris*—Manufacturers.

Confectionery, and articles for the use of confectioners.

1061 Bach, —, sen., 99 *Faubourg St. Denis, Paris*—Manufacturer.

Specimens of transparent painted blinds.

1062 Bacot, Paul, & Son, *Sedan* (*Ardennes*)—Manufacturers.

Specimens of satin cloths and kerseymeres, of various colours and qualities.

1063 Badin, Jacques Chas. Frederic, 337 *Rue St. Denis, Paris*—Manufacturer.

Basket-work, and hats of diamond-like feather fabrics.

1064 Balay, Jules, *St. Etienne*—Manufacturer.

Specimens of silk ribbons of different qualities, plain and figured.

1065 Balleidier, Félix, 20 *Rue des Capucins, Lyons* (*Rhône*)—Manufacturer.

Figured velvets, with and without embroidery. Velvet waistcoats.

1066 Balny, Jean Pe., jun., 41 *Rue de Charenton, Paris*—Manufacturer.

Centre seat for a drawing-room, which can easily be altered into various forms to suit different occasions. It will form a large sofa for eight persons; it can also be changed to a sofa of the ordinary size, and two arm-chairs, or two sofas *vis-à-vis*. The statue which ornaments it is from the manufactory of M. Paillard, and being moveable, may be replaced by a bronze or porcelain vase for flowers, or by a candelabrum.

An arm-chair in rose-wood, covered with moquette carpet. This piece of furniture may speedily be taken to pieces.

An arm-chair in black wood, in imitation of ebony, ornamented with gilt bronze, and covered with Lyons damask. A fancy chair for the drawing-room or boudoir, ornamented in gold and white, and covered with silk. Fancy chair in walnut-tree, covered with silk.

1067 Barbat, —, *Châlons-sur-Marne*—Lithographer.

Illustrated volumes of Scripture.

1068 Barbé, C., *Mulhouse* (*Haut-Rhin*)—Designer.

Designs for stuff-printing.

1069 Baton, Wm., & Son, 11 *Rue Noire, Lyons* (*Rhône*)—Manufacturers.

Specimens of felt and silk hats.

1070 Battenberg, Guillaume, 20 *Rue du Dragon, Paris*—Printer.

Specimen of printing; one volume bound.

1071 Baudry, Alex. The., *Athis, Mons* (*Seine and Oise*)—Manufacturer.

Specimens of steel for springs and other purposes.

1072 Bauerkeller & Co. (Berger, Walter, successor), 7 *Rue d'Enghien, Paris*—Publishers.

Specimens of geographical maps. Plans of towns in relievo; sacred paintings; and sky-lights.

1073 Bazin, A., *Mesnil, St. Firmin* (*Oise*)—Agriculturist.

Samples of wheat in the ear and in seed.

1074 Beaufils, —, *Place des Quinconces, Bordeaux*—Manufacturer.

Writing-table, work-table, cupboard, sofa, causeuse or small sofa, arm-chairs, and chairs, in the style of Louis XV.

1075 Bernard, A., 16 *Avenue de la Mothe-Piquet, Paris*—Manufacturer.

Specimens of hunting guns.

1076 Beauvais, Camille, 18 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.

Specimens of raw silk.

1077 Bellangé, Alexandre Louis, 77 *Rue de Marais, St. Martin, Paris.*

Specimen of cabinet work. Round articles of furniture. Flower-stands. Consoles and round desk, style Louis XIV.

1078 Belleville Brothers, *Nancy* (*Meurthe*)—Manufacturers.

Specimen of starch.

1079 Bellon, Jos., & Co., 2 *Rue du Griffon, Lyons* (*Rhône*)—Manufacturers.

Specimens of figured silks: Lustrine, taffeta, English velvet, vénetienne, satin, &c.

1080 National Sheep Fold of Rambouillet (*Seine and Oise*)—Producer.

Specimens of real merino.

1081 Bernard, Jn. Bte., *Valenciennes* (*Nord*)—Manufacturer.

Specimens of veneered panel and inlaid flooring.
Cases for printing-offices on a new principle.

1082 Berteche, Chesnon, & Co., *Sédan* (*Ardennes*), and 29 *Rue des Fossés, St. Germain l'Auxerrois, Paris* — Manufacturers. (Agents, Vacossin, Bonnet, & Fournier, 5 *Wood Street*.)

Specimens of cloths of different shades, kerseymeres, satins, and fancy articles of every description.

1083 Barbotin & Legoff—Manufacturers.

Capstans and iron rope manœuvring apparatus for vessels.

1084 Berton, H., 13 *Rue Faubourg St. Martin, Paris*—Manufacturer.

Pasteboard boxes. Perfumed cases and satchels. Envelopes of letters.

1085 Bertrand, Gayet, & Dumontat, 27 *Place de la Comédie, Lyons* (*Rhône*)—Manufacturers.

Specimens of figured silks; shawls, neckerchiefs, scarfs.

1086 De Bettignies, Maximin, *St. Amand les Eaux* (*Nord*)—Manufacturer.

Porcelain vases (soft biscuit), ornamented and mounted in bronze. Flower-stands and other articles, in soft and ornamented porcelain.

1087 Bianchi, J., & Duseigneur, *Lyons* (*Rhône*)—Manufacturers.

Various samples of raw and wrought silks.

1088 Bisson, Isidore, jun., *Bernay* (*Eure*)—Manufacturer.

Specimens of cloth for frocks, bronzed wadding, blue pilot-cloth, &c.

1089 Blaize, H., 3 *Rue Tourraine, St. Germain, Paris*—Engraver.

Specimens of embossed engraving on brass.

1090 Blanchet & Kléber, *Rives* (*Isère*)—Manufacturers.

Specimens of white and coloured paper, sized and unsized.

1091 Bleuze, Hadencourt, 33 *Rue des Lombards, Paris*—Perfumer.

Fruit-soap: oranges, lemons, and citrons, having the perfume of the fruit they resemble, enveloped in a transparent, invisible pellicle, impermeable to air and wet, and adapted for exportation. The envelope quickly disappears on rubbing the soap in water.

Flower-soap: soap made into artificial flowers. A basket representing soap on a stalk.

Sweet and bitter almonds in small velvet boxes, formed like the shell of the green almond, and having the smell of the real fruit.

Pomegranate jelly; pistachios-nuts, almond, and ananas creams; new perfumes for ladies.

1092 Bobée & Lemire, *Choisy-le-Roi* (*Seine*)—Manufacturers.

Chemical products: Acids, acetates, bi-carbonate of soda, chloroform, emetics, turpentine, ether, oils for lamps, nitrate of lead, caustic potash, pyrolignite of iron and lead, sulphate of copper, verdegris Schweinfurt.

1093 Bollee, Ernest, *St. Croix-lès-le-Mans* (*Sarthe*)—Bell-founder.

Model of three bells, forming a perfect chime, for a two-storied belfry. The larger one is suspended by a new method of suspension, called "à la developpante," showing, on a scale of one to five inches, the new method of suspension adopted by the exhibitor for the large bell of the cathedral in Paris.

1094 Bonfils, Michel, Souvraz, & Co., 3 *Rue des Fossés Montmartre, Paris*—Manufacturers.

Cashmere square shawls and scarfs.

1095 Bonnet, Jean Baptiste, *Rousset*—Inventor.

A plough with double subsoil action.

1096 Bonnet, —, jun., 5 *Chemin de Ronde de la Barrière Ménilmontant*—Manufacturer.

Fire-proof earthenware. Chemical apparatus, and crucibles for castings.

1097 Bonnet & Co., 2 *Rue du Griffon, Lyons* (*Rhône*)—Manufacturers.

Specimens of plain silks: taffeta and satin.

1098 Boquet, Mlle. Marie Virginie, 27 *Rue du Tronchet, Paris*—Painter on Porcelain.

A portrait of Louis Philippe, painted on enamel.

1099 Bord, A., 35 *Boulevard Bonne Nouvelle, Paris*—Manufacturer.

Grand pianoforte.

1100 Borsary, —, *Dijon* (*Côte d'Or*)—Manufacturer.

Specimens of surgical apparatus.
Instruments for various uses, and bandages.

1101 Bottier, Louis Nicolas, 36 *Rue St. Jean de Beauvais, Paris*—Engineer.

Machines for gold-beating. Beaten gold, as specimens of their application.

1102 Bouasse, Lebel, & Co., *Rue du Petit Bourbon, Paris*—Producers.

Samples of gelatine pictures.

1103 Bouchard, Florin, *Tourcoing* (*Nord*)—Manufacturer.

Specimens of satin, woollen, and cotton fabrics, &c.

1104 Boucherie, J. A., 4 *Rue Mondovi, Paris*—Inventor.

Various kinds of wood, saturated by a chemical process, which tends to their preservation. Woods dyed by the same process; apparatus for performing the operation.

1105 Boudon, Louis, *St. Jean du Gard* (*Aisne*)—Manufacturer.

Specimens of white and yellow silk for bolting cloths: weft and satin organzin, gauze, and articles manufactured at St. Quentin (Aisne).

1106 Bouhardet, Claude Philibert Michael, 70 *Rue de Bondy, Paris*—Manufacturer.

Carved billiard-table, in the style of Louis XIV., imitation of buhl, exhibited for the beauty of its Indian tortoiseshell, with six cameos of Sèvres porcelain. The painting represents "Cupids Playing." The mosaic is of a severe style, framed in ebony mouldings, and ornamented with chased copper.

Mahogany billiard-table, combined and arranged to prevent the effects of atmospheric changes; in the style called "renaissance," sculptured or carved in walnut-tree wood, imitation of ebony, representing several historical personages of that era.

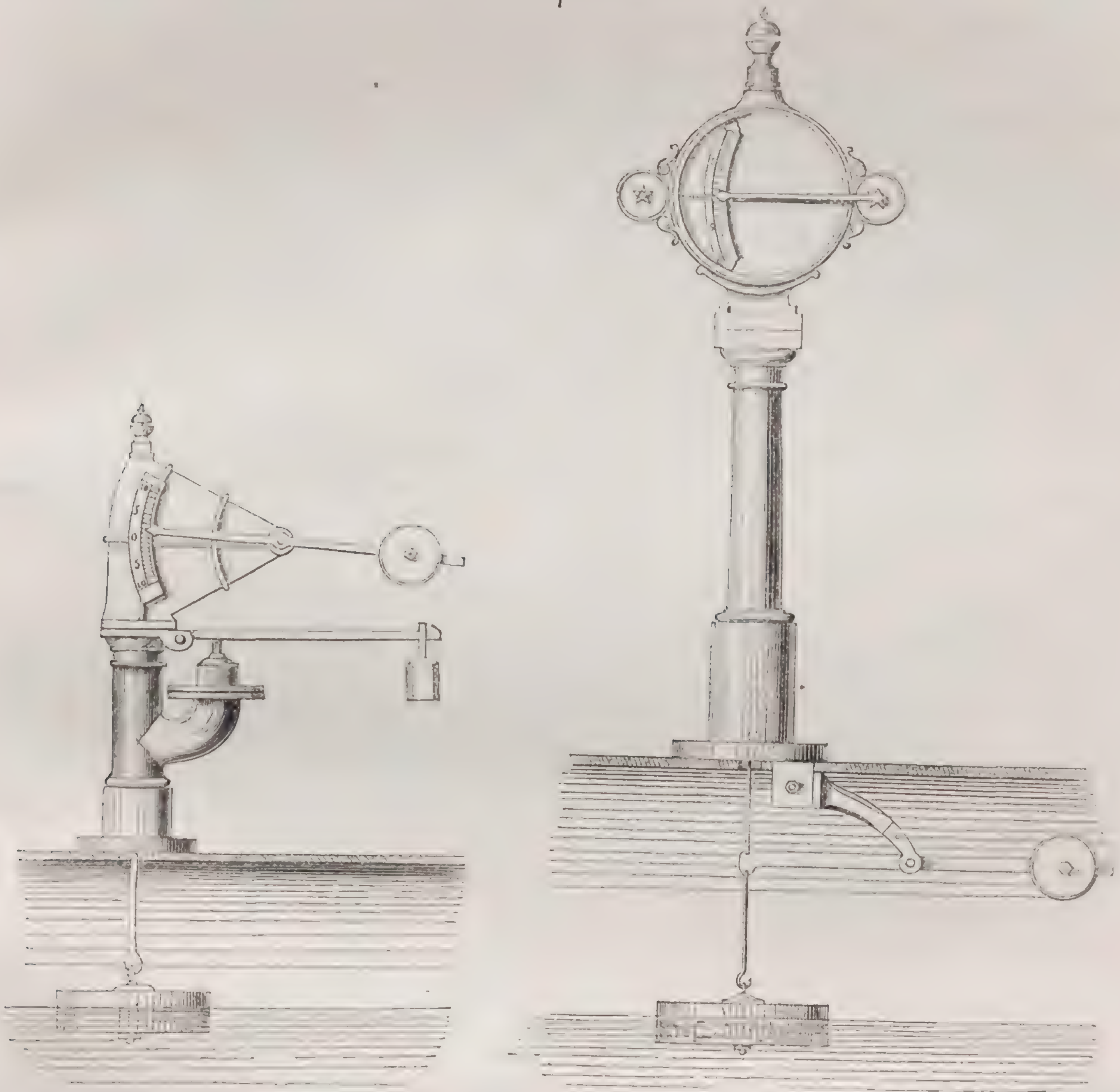
1107 Bouillette, Hyvelin, & Co., 46 *Rue St. Avoye, Paris*—Jewellers.

Frontlet, composed of seven brooches, stomachers, bracelets, brooches,, and other articles of gold and silver jewellery, set with stones.

1108 Bourdon, Eugene, 74 *Faubourg du Temple, Paris*—Machine-builder.

Acting model of a steam-engine; various instruments for measuring the pressure of steam and gases, the atmospheric pressure, the temperatures, &c.; new metallic steam-gauges to show the pressure of steam in the boilers of fixed engines, locomotives, and steam-boats, high and low pressure, adopted by the principal railway companies in France; air-pressure gauges, for blowing engines in high furnaces; Watt's steam indicator to register the variation of pressure in steam-engines; gas regulating apparatus; new portable metallic barometer; model of steam-engine to -how how the carved metallic tubes may be employed to supply the place of cylinders and pistons; new water level, with self-acting steam-whistle, without stuffing-box.

Some of these indicators are represented in the annexed illustrations.



Bourdon's Indicators for Steam Boilers.

1109 Fortin, Boutellier, 24 *Rue du Moulin, à l'Huile, Beauvais (Oise)*—Manufacturer. (Agent, J. S. De Gaetan, 3 *Bow Lane, Cheapside.*)

Specimens of manufactured, spun and prepared woollen cloth.

1110 Bouvard & Lançon, *Lyons (Rhône)*—Manufacturers.

Specimens of figured silks; satin, damask, lustrine, brocatelle, &c.

1111 Brandus & Co., 87 *Rue Richelieu*, and 40 *Rue Vivienne, Paris*—Publishers.

Specimens of printed music.

1112 Breteau, Charles Auguste, 34 *Rue Notre Dame des Victoires, Paris*—Manufacturer.

Artificial flowers, and plumes of feathers for dresses and head-dresses.

Trimmings for dresses, &c.

1113 Breton Brothers, 23 *Rue Dauphine, Paris*—Inventors and Manufacturers.

Air-pump, with rotatory motion; electro-medical apparatus; electric locomotive.

1114 Benoit, Malo, & Valbaum, *Rheims*—Manufacturers.

Specimens of merinos.

1115 **Bridard, J.**, 53 *Rue Vivienne, Paris*—Boot-maker.

Japanned riding boots; hunting boots; and various kinds of shoes and boots.

1116 **Briquet & Perrier**, 22 *Rue Jean Robert, Paris*—Manufacturers.

Caoutchouc webbing for braces, garters, &c.

1117 **Brisson Brothers**, 13 *Rue du Griffon, Lyons* (*Rhône*)—Manufacturers.

Specimens of silk and cotton plushes.

1118 **Brosse & Co.**, 1 *Rue Lorette, Lyons* (*Rhône*)—Manufacturers.

Specimens of plain silk velvets, of different colours.

1119 **Bruneau, L. A.**, 40 *Rue de Montmorency, Paris*—Silversmith.

An assortment of articles in silver, gold, and fancy jewellery, including:—

Silver, gold, and silver-gilt pencil-cases. Desk seals, with ivory, stone, and silver handles. Seals, watch-keys, thimbles, scissors, needle-cases, bodkins, crochet-needles for embroidery. Ladies' companions in ivory, ebony, and other woods, with gold, silver, and silver-gilt fittings. Snuff-boxes in niello and damascene, and silver-gilt fancy patterns. Silver and silver-gilt bonbon-boxes. Daggers in artistic silver. Sets of writing implements, with stone, ivory, tortoiseshell, and silver-gilt mountings. Paper-knives, and pen-holders. Smelling-bottles, mounted in gold, silver, and silver-gilt. Card-cases, souvenirs, ladies' tablets, and ball tablets. Cigar-cases, match-boxes, cigar-holders. Double eye-glasses of various patterns. Portmonnais and purses for gold. Silver table plate, including dessert covers, tea-spoons, sugar-tongs, tea-strainers, shells for tea-caddies. Spoons for sugar, olives, preserves, punch, and eggs. Pestle-poons for melting sugar in water, ice and salt-spoons. Salad forks and spoons, fish-knives, ice-trowels, egg-cups, and napkin-rings, breakfast-cups, miniature breakfast services. Silver-gilt goblets, and crystal goblets set in silver-gilt. Carving knives and forks. Table and dessert knives, with silver, silver-gilt, and ivory handles. Picnic boxes with folding fittings. Tea-cases, with complete service, &c.

1120 **Brunet, Lecomte, Guichard, & Co.**, *Lyons* (*Rhône*)—Manufacturers.

Specimens of silk prints: taffetas, satined muslins, damasked gauze, crape for shawls, scarfs and neckerchiefs.

1122 **Buffault & Truchon**, *Essonne* (*Seine and Oise*)—Manufacturers.

Wool and cotton blankets.

1123 **Bugre, Auguste**, *Rue Neuve, St. Laurent, Paris*—Manufacturer.

Canes in tortoiseshell and ram's horn.

1124 **Buignier, Gabriel S. F.**, 20 *Rue des Vertus, Paris*—Producer.

Specimens of artistic bronzes; matrices engraved on steel; battle of Brenneville; religious subjects; groups of animals and children, &c.; by a new process for applying cast iron to steel engravings.

1125 **Buisson, —, sen., & Co.**, *St. Etienne* (*Loire*)—Manufacturers.

Specimens of fancy gauze and rich silk ribbons.

1126 **Cabanes & Rambié**, *Bordeaux* (*Gironde*), and 53 *Quai de Paludate*.

Grils flowers; specimens of wheat from the market of Bordeaux. Specimens of wheat of Egyptian origin. Flour of Egyptian origin. Samples of ground seeds, obtained by a newly-invented accelerator, by which damp and greasy grains may be ground.

1129 **Cain, A.**, 103 *Faubourg St Denis*—Sculptor.

Specimens of bronzes: Nest with a group of birds fighting. Pair of goblets. Group of birds. Nest with birds. Two ink-stands. Two herons, &c.

1130 **Canneaux, L. M., & Sons**, *Rheims* (*Marne*), and 14 *John Street, Crutched Friars, London*—Wine Merchants.

New apparatus for working and liquifying champagne wines.

1131 **Cavelan & Co.**, *Bagnères de Luchon* (*Haute-Pyrenées*)—Manufacturers.

Chemical products:—ore of argentiferous lead. Ore of oxide of manganese. Red and yellow litharge.

1132 **Carle, A. T.**, *St. Mauer lez Fossés* (*Seine*)—Manufacturer.

Specimens of brass foundry; objects of art; candlesticks; clocks; flower-stands, &c.

1133 **Caron, Alphonse**, *Passage de l'Opéra, Paris*—Manufacturer.

Parisian gun; four plain guns; carbine; pair of tier pistols; pair of pistols in the Eastern style; drawing-room pistols.

1134 **Carquillat, M., Candy, & Co.**, *Croix Rousse, Lyons* (*Rhône*)—Manufacturers.

Picture woven in silk, with portraits.

1135 **Carrier, Rouge**, *Rue de Puits d'Ainay Lyons* (*Rhône*)—Manufacturer.

Specimens of candelabras; chandeliers; and bronze censers.

1136 **Carriere, F.**, *St. André de Valborgne* (*Gard*)—Silk-throwster.

Skeins of raw silk, white and yellow.

1137 **Causse & Garion**, *Lyons* (*Rhône*)—Silk-spinners.

Specimens of raw and wrought silks.

1138 **Cauvet, J.**, *Chantilly* (*Oise*)—Manufacturer.

Specimens of manufactured produce: wool combed and carded, and yarn.

1139 **Chagot, —, sen.**, 73 *Rue Richelieu, Paris*—Manufacturer.

Specimens of feathers and bouquets of feathers; artificial flowers. Fine flower ornaments and head-dresses. Vases for the same.

1140 **Chambellan & Co.**, 8 *Rue des Fossés Montmartre, Paris*—Manufacturers.

Square shawls and scarfs in wool and cashmere.

1141 **Chamber of Commerce of Lyons** (*Rhône*)—Producer.

Pictures woven in silk: 1. Silk stuff woven on the Jacquard frame, representing the will of Louis XVI., and executed by M. Maisiat. 2. The arms of the city of Lyons, in colours, executed by MM. Matheron and Bouvard. 3. The portrait of Jacquard, by M. Dider Petit. 4. Scriptural subject.

1142 **Chamouillet, —**, 22 *Rue de Cléry, Paris*—Manufacturer.

Oval glass and etched mirror glass, with carved wood frames.

1143 **Champagne & Rougier**, *Lyons* (*Rhône*)—Manufacturers.

Specimens of figured silks; parasols and models of dresses, flounced.

1144 **Charageat, Emile**, 268 *Rue St Denis, Cour des Bleus, Paris*—Manufacturer.

Umbrellas, parasols, of new and improved forms and construction, with handles of different materials. Marquees.

1145 **Charrière, —**, *Rue de l'Ecole de Médecine, Paris*—Manufacturer.

Specimens of surgical apparatus, and instruments of every kind, cutlery, &c.

1146 **Chebeaux, Jules**, 3 *Rue St. Fiacre, Paris*—Designer.

Designs for all descriptions of printed and woven fabrics, fancy work, cachmere dresses, paper-hangings, furniture, stuffs, silks, &c. Designs for Abusson carpets.

1147 **Carriol, Baron**, *Angers (Maine and Loire)*—Manufacturer.

Specimen of combed wool.

1148 **Chocqueel, Felix**, *St. Denis*—Manufacturer.

Scarfs in satinet barege; with grounds of various colours and cachmere designs. Shawls.

1149 **Choquart, C.**, 259 *Rue St. Honoré, Paris*—Manufacturer.

Specimens of chocolate of different qualities.

1150 **Chosson & Co.**, 63 *Rue Montmartre, Paris*—Glovers.

Ladies' and gentlemen's kid gloves.

1151 **Clair, Pierre**, 93 *Rue du Cherche-Midi, Paris*—Inventor and Manufacturer.

Model of a locomotive engine; Clair's indicator. Lapointe's calculating machine.

1152 **Clémençon, Madame**, 8 *Rue du Port-Mahon, Paris*, and *Mount Street, Grosvenor Square, London*—Corset-maker.

Corsets in bleached silk, for delicate constitutions. Corsets for riding.

1153 **Coignet & Son**, *La Guillotière, near Lyons (Rhône)*—Manufacturers.

Chemical products: Glue, gelatine, phosphorus, prussiate of potassium, &c.

1154 **Colliard & Comte**, *St. Etienne (Loire)*—Manufacturers.

Specimens of silk ribbons.

1155 **Collot Brothers**, 41 *Rue de l'Ecole de Médecine, Paris*—Manufacturers.

Chemical balance, capable of weighing upwards of 3 lbs. The sensibility is one thousandth part of the weight. It is mounted on an enamelled cast-iron pedestal, and furnished with weights. Exhibited for novelty, accuracy, and simplicity of construction, and its capability of resisting the action of acids.

Chemical balance, capable of weighing 3½ ounces, with a sensibility of a hundred and thirtieth part of a grain, or the twenty-thousandth part of the weight; similarly mounted.

Assay balance, mounted on a gilt column, capable of weighing a pennyweight, and sensible to the ten-thousandth part of the weight.

1156 **Conrad, Wilhelm**, 26 *Rue Vieille du Temple, Paris*—Manufacturer.

Refined camphor blocks. Specimens of sublimated iodine and of ioduret of potass.

1157 **Corderant, Adolphe**, *Rue de Paradis, Paris (Marais)*—Manufacturer.

Porcelain door-knobs and finger-plates. Balustrades, tassels, bell-pulls, tobacco-boxes, tea-caddies, cigar-stands, &c.; china and crystal glass goblets and tumblers, mounted in bronze, and gilt and varnished. New patterns.

1158 **Claudin, —**, 1 *Rue Joquelet, Paris*—Manufacturer.

Guns and pistols of new construction.

1159 **Cordonnier & Co.**, 5 *Rue de Charonne, Paris*—Manufacturers.

Rosewood bookcase. Drawing-room buffet. Flower-stand of rosewood, with glazed doors, revival style.

1160 **Couchonnal & Co.**, 79 *Rue de Richelieu, Paris*—Manufacturers.

A collection of embroidered dresses and shawls in silk. Moire antique, in white and black satin, in taffetta, tulle, merino, &c. The embroidery is in coloured silks, gold thread, &c.

1161 **Couchoud, —**, 11 *Place St. Charles, St. Etienne (Loire)*—Manufacturer.

Specimens of satin, velvet, and silk ribbons.

1162 **Coupin, Jérôme**, *Aix (Bouches du Rhône)*—Manufacturer.

Felt hats of various colours, without dressing.

1163 **Courtois, Antoine**, 21 *Rue du Caire, Paris*—Musical Instrument-maker.

Trumpets, clarions, trombones, horns, ophicleids, and various other brass instruments, with pistons and cylinders on a new system.

1164 **Courte, Paul**, 47 *Grand Rue, Lyons (Rhône)*—Dyer.

Specimens of silks dyed black for plush.

1167 **Damison & Co.**, 6 *Rue des Capucins, Lyons (Rhône)*—Shawl Manufacturers.

Long shawls of wool, and of wool and cachemire.

1168 **Daniel, —**, jun., 33 *Rue Michel-le-Comte, Paris*—Jeweller.

Steel mountings for purses; articles in steel used for jewellery.

1169 **Darvieu, Valmard, & Co.**, *Laroque, near Ganges (Hérault)*—Silk-spinners.

Specimens of white and yellow silks.

1170 **Daudre, A.**, *St. Quentin (Aisne)*; and 17 *Rue Bertin Poirée, Paris*—Manufacturer.

Specimens of linen fabrics, table-cloths, and napkins.

1171 **Dauthuile, Auguste Théodore**, 84 *Rue Montmartre, Paris*—Bookbinder.

Bindings in gilt and stamped cloth, relievo; box-covers in alto-relievo, gilt, silvered, and coloured. Printed by the exhibitor's new process.

1172 **Debain, A.**, 15 *Rue Vivienne, Paris*—Manufacturer. (Agent in London, **Novello & Co.**, 44 *Dean Street, Soho.*)

Piano-mécanique, or antiphonel pianoforte, an instrument which has been applied with success as a substitute for organs and harmoniums; it is said to be superior to the barrels used in church-organs, and less costly.

The flat surface of the upper portion of the antiphonel is covered with a metal plate, pierced across its width with a series of openings, which admit through them a corresponding number of metal points, projecting about the eighth of an inch above the plate. These points are the extremities of small levers, which communicate with the action; thus the upper level surface of the machine forms a complete key-board; the projections are pressed down to perform the music by a small piece of hard wood, studded with pins, which is forced over the level surface already mentioned.

This piece is held down by a bar placed over it, and the pressure regulated by springs. Having placed the piece on the antiphonel, it is passed over the key-frame by turning a handle, and as the pins on the plank come in contact with the antiphonal keys, the notes are struck, which are loud or soft, as may be required.

The pieces studded with pins may be from 4 inches to 24 inches long; 8 inches will contain as much as is usually written on a page of music paper, and any number of pieces may be used for compositions of greater length. While one piece is playing, another should be had in readiness immediately to succeed it, until the piece of music is concluded.

The mode of studding the wood with pins, to produce the various effects required, is very simple, and easily executed.

The antiphonel can be placed on the pianoforte as a cover, and by a simple contrivance, on opening the pianoforte, the antiphonel action is removed, and on touching the keys the tone of the instrument is not affected by the attachment. In closing the pianoforte the antiphonel resumes its place, and is ready for use.

When applied to the organ, &c., as pressure on the keys is only required, the antiphonel is placed over the key-frame, and appears like fingers pressing down the required notes. This instrument is played in the Exhibition building.

1173 Debbeld-Pellerin, —, *Nancy* (*Meurthe*)—Manufacturer.

Embroidered bed-coverlet; various cards of patterns for handkerchiefs, representing a variety of escutcheons, arms, vignettes, &c.

1174 Degardin, Vincent Augustin Marie, 62 *Rue du Temple, Paris*—Manufacturer.

Specimens of burnishing-stones of all sorts, for the use of gold and silversmiths, such as blood-stones, agates, and flints.

Specimens of steel burnishers, English rouge, putty, leather, and buff-skin for polishing; and various other articles belonging to the trade.

[Burnishing-stones and blood-stones, as used by jewellers, are jaspery varieties of quartz, of flinty nature and velvet-black colour. One use is to try the colour of the precious metals, and for this their extreme fineness of grain, hardness, and colour, are their chief recommendations. The best of them are obtained from Lydia (Asia Minor), whence they are called Lydian-stone: they are found as pebbles.—D. T. A.]

1175 Delarbre, —, *Lavalette, near Montpellier* (*Hérault*)—Producer.

Specimens of raw and thrown silk.

1176 Delarbre, Victor, *Gazilhac, near Ganges* (*Hérault*)—Silk-spinner.

Specimens of raw and thrown silks.

1177 Duval, —, *Paris*—Inventor.

A new system of locomotion for railways.

1178 Deleuze, Alphonse, *St. Ambroise, arrd. d'Alais* (*Gard*)—Producer.

Specimens of raw silk.

1180 Delignou, Victor, 163 *Rue Montmartre, Paris*—Inventor.

Hot-air stoves, japanned tin lamps, &c.

1181 Delisle & Co., *Briè, near Grenoble* (*Isère*)—Manufacturers.

Printed morocco leather for slippers, furniture, medallions, &c.

1182 Deneirousse, E., Bois Glavy, & Co., 16 *Rue des Fossés, Montmartre, Paris*—Manufacturers.

French Cashmere shawl.

1183 Denuelle, Auguste Dominique, 43 *Rue des Petites Ecuries, Paris*—Producer.

Natural product for the ceramic art, feldspath.

1184 Desauges, Achilles, 57 *Quai Valmy, Paris*—Manufacturer.

A carved mantelpiece. Two mangers. Two filters. Models of pavement in short square stones of marble; chimney of Tonnerre stone, executed by Mr. Guersant, statuary.

[The stone used in the manufacture of the chimney-piece here exhibited is remarkable for its smoothness and evenness of texture and its excellent tint of colour. It would appear to be easy and free in working, and the carved work is worthy of notice for its boldness.—D. T. A.]

1185 Deschamps, Nicolas, 14 *Galerie d'Orleans, Palais National, Paris*—Manufacturer.

Specimens of boots and shoes.

1186 Desfontaines, Maison Leroy, & Son, 13 & 15 *Galerie Montpensier, Palais National, Paris*—Watchmakers.

Travelling clock, striking the minutes. A clock made of iron and porcelain, movement indicating the quarters. Watches. Chronometers. Musical picture, &c.

1187 Deviolaine Brothers, *Vauxrot* (*Aisne*)—Glassmakers.

Thirty samples of bells and bottles.

1188 Devrange, Bernard, jun., 257 *Rue St. Denis, Paris*—Manufacturer.

Pieces of lace-paper, as rims of plates and cards.

1189 Dida, Alphonse, 11 *Boulevard du Temple, Paris*—Manufacturer.

Samples of varnish; alcohol varnish for imitating gold on copper, for metals, wood, leather, and paper; white varnish for water-colours and oil painting, which may be removed with spirits of wine. Samples of water-proof paper and fabrics.

1190 Dinant & Huette, 8 *Rue Levesque, Nantes* (*Seine-Inférieure*)—Producers.

Fresh butter kept without salt. Process patented in England and France.

1191 Dollfus, Mieg, & Co., *Mulhouse* (*Haut-Rhin*)—Manufacturers. (Depôt, 9 *Rue St. Fiacre, Paris;* and 44 *St. Paul's Churchyard, London.*)

Pieces of wool, muslin, jaconet, clear muslin, &c., spun, woven, and printed by the exhibitors.

1192 Donat, Andrè, *Place Croix Paquet, Lyons* (*Rhône*)—Manufacturer.

Waistcoats and dresses, fancy watered silk; grenadine, satin, poplin, &c.

1193 Donat & Co., *Lyons* (*Rhône*)—Manufacturers.

Specimens of silk plush for hats. Plain hats.

1194 Dopter, C. V. M., 58 *Rue de la Harpe, Paris*—Manufacturer.

Specimens of figured black and coloured lace.

Specimens of designs engraved on silk by chromo-lithography.

1195 Donzel & Maussier, 6 *Rue National, St. Etienne (Loire)*—Manufacturers.

Specimens of fancy ribbons.

1196 Drouin & Brossier, *Labriche, near St. Denis (Seine)*—Manufacturers.

Chemical products: Extracts of Campeachy, Cuba, Lima, and Pernambuco wood. Salt of roses. Oximuriate of tin. Dentochlorure of tin. Staumate of soda.

1197 Duboscq-Soleil, —, 35 *Rue de l'Odéon, Paris*—Optician.

Optical apparatus and instruments of all kinds; solar light conductor, consisting of a mirror with two glasses, the one of plated glass for reflection, the other of blackened glass for polarization. Large photogenic apparatus for supplying sun-light, and by the help of a lamp only, to practice experiments in optics. Apparatus for regulating electric light. Large apparatus of rotatory polarization for liquids and solids. Saccharometer or apparatus for determining the nature and the quantity of sugar contained in any sacchariferous liquid. Arago's polariscope for rendering conspicuous the smallest vestiges of polarized light. Mr. Jamin's apparatus for investigating the laws of polarization. Brewster's stereoscope. Apparatus for the hyperbole of compensation. Fresnel's press. Apparatus of Norremberg, the most convenient practical polarizing apparatus. Cyano-polarimeter of Arago for measuring the intensity of the polarization, and of the blue colour of the sky. Arago's sciepelescope, by means of which a person can distinguish by polarized light the rocks hidden beneath the waters.

1198 Duchêne, —, 7 *Rue Geoffroy Langevin, Paris*—Hatter.

Specimens of silk and felt spring hats, with boxes. Specimens of self-acting mechanical hats. By an ingenious mechanism these hats open without effort when placed on the head, and preserve their appearance and shape for an indefinite period.

Specimen of the Napoleon hat. These hats were invented and patented by the exhibitor.

1199 Ducourtioux, Charles Louis, 4 *Rue Fontaine-au-Roi, Paris*—Manufacturer.

Caoutchouc stockings and belts made by machinery.

1200 Dufossé, —, 13 *Rue St. Dominique, Faubourg St. Germain, Paris*—Manufacturer.

Waterproof hunting-boots.

1201 Dufossé, —, 24 *Rue de la Paix, Paris;* and 20 *Old Bond Street, London*—Manufacturer.

Improved ladies' boots and shoes.

1202 Dulud, J. M., 27 *Boulevard des Italiens, Paris*—Manufacturer.

Embossed leather for carving and ornamental hangings. Elbow chair. Etagère article of furniture. Leather panels for hangings, and various other samples of leather carving.

1204 Dupas, Emile, 6 *Rue Folie Méricourt, Paris*—Manufacturer.

Specimens of preserved food.

1205 Dupasquier, J. P., 20 *Montée St. Barthelemy, Lyons (Rhône)*—Inventor and Manufacturer. (Agent, J. Bonorandi, *Bishopsgate Churchyard.*)

Elastic mattresses and beds. Seats for furniture, carriages, &c.

The elastic mattress, manufactured with the spring invented by the exhibitor, possesses all the advantages of the old mattress, and has none of its inconveniences. Its construction is simple, light, and solid; it forms a soft and comfortable couch; and its pliancy may be varied according to the will of the possessor. The upper ticking, when worn or soiled, may be easily removed, so as to answer all the purposes of health and cleanliness. The springs are plated by means of a composition, which preserves them from rust, and gives them a pleasing appearance. No horsehair or similar matter is employed likely to produce a disagreeable smell; and the construction is such, that should the spring become undone, or any part of the couch be accidentally injured, the repair can be easily and quickly effected. These spring mattresses are well adapted to iron bedsteads; and by a suitable arrangement of the springs on the bands, the wooden case required in other mattresses is dispensed with. They are calculated to supersede the use of straps or canvass in bedsteads; and are useful in country houses, in hotels, in establishments for mineral and other waters, and in places of frequent and general resort.

The elastic mattresses for wooden or iron bedsteads being easily undone, are particularly adapted for emigration, military trains, colonies, and in general for all sorts of exportation, and for beds in cabins, and on board steamers. Mattresses with lower springs are specially manufactured for these purposes.

The use of these springs is not, however, confined to elastic beds and mattresses; it is adapted to all sorts of seats, such as sofas, arm-chairs, other chairs, seats in stage coaches, omnibuses, vehicles of every description, including steamers and every other mode of travelling. The circumstance of its working in the direction of the fibre of the metal of which it is made, renders it capable of resisting the most violent concussions.

1206 Durand, Boucourt, & Pitard, 68 *Rue des Carmes, Rouen*—Confectioners.

Sugar of apples and cherries. Jellies. Sugar-candy.

1207 Durand, E. P., 6 *Rue St. Claude (Marais)*, and 105 *Boulevard Baumarchais, Paris*—Manufacturer.

Large mahogany book-case with sculptures, in the style of the renaissance. A large oak sideboard, with sculptures representing fruit, &c., hunting and fishing emblems. A collection of chairs in the styles of Louis XIV., Louis XV., and Louis XVI.; and two chairs of a new style, the sculpture of which consists of intermingled roots.

1208 Durand, G., 8 *Rue Marie Stuart, Paris*—Manufacturer.

Tanned strong and calf leather.

1209 Dutron, —, jun., 345 *Rue St. Denis, Paris*—Manufacturer.

Samples of silk ribbons for trimmings.

1210 Duval, M., *Paris*—Manufacturer.

Chemical products. Cakes of onions, of coffee with milk, and of chocolate solidified into cakes. Metal hangings, ivory, and metallized horns and bones.

1211 Eck & Durand, 15 *Rue des Trois Bornes, Paris*—Bronze-founders.

A statue of Cupid clipping his wings, by Bonnassieux. A fawn dancing on goat-skin, by Lequesse.

1212 Emmerich, J. B., & Georger, jun., *Strasbourg (Bas-Rhin)*—Manufacturers.

Morocco leather of various colours. Grey morocco for saddlery. Gilt morocco, green and black. Gilt sheepskins.

1213 Essique & Delamare, 5 *Rue de Périgueux, Paris*—Manufacturers.

Specimens of metallic pearls.

1214 Estivant Brothers, *Givet (Ardennes)*—Brass-founders and Tanners.

Brass plates. Rolled round and square plates. Pans made of one single piece. Brass clear-wire of all dimensions. Tanned leather from Buenos Ayres. Glue.

1215 Etex, Antoine, *Institute de France*—Sculptor.

Two groups in plaster—one representing Cain's family; the other, the Cholera.

1216 Ernest, Madame, 28 *Rue Bourgoyne, Paris*—Manufacturer.

Specimens of stays without seams.

1217 Farjon, Henri, *Roquemaure* (*Gard*)—Silk-throwster.

Specimens of raw silk and organzin.

1218 Faure, —, 24 *Place de la Madeleine, Paris*—Sculptor.

A figure carved on a single piece of wood.

1219 Faure, —, 14 *Rue de Faubourg St Denis, Paris*; Depôt in London, 27 *Great Russell Street*—Manufacturer.

Ebony buffet, with bronze ornaments. Chairs. Easy-chairs in different styles.

1220 Favrel, A., 27 *Rue du Caire, Paris*—Goldbeater.

Gold and silver beaten into leaves, for gilding. Gold and platina for dentists. Gold, silver, and bronze, in shells. Gold-leaf prepared for the American market.

[Gold, when pure, is capable of being beaten into leaves only $\frac{1}{280000}$th of an inch in thickness. In this state it is translucent, transmitting light of a beautiful green colour. Platinum is much harder than gold, and not by any means so malleable, although its ductility and tenacity are very great. Gold has been formed into wire of which 550 feet weigh only a grain, and which is only $\frac{1}{5000}$th of an inch in diameter; but platinum has been reduced to a wire of one-sixth of this diameter.—D. T. A.]

1221 Fayet-Baron, —, at Messrs Fontaine, 269 *Rue St. Honoré, Paris*—Locksmith.

Safety-lock, for bankers' safes, of simple mechanism and easy application. It is considered to be impossible to pick this lock.

1222 Forges of Bigny—Producer.

Specimens of iron casts, and wire.

1223 Florange, —, jun., 20 *Rue du Faubourg St. Antoine, Paris*—Manufacturer.

Ebony and rosewood furniture, with gilt bronze mountings.

1224 Florimond, —, 8 *Rue Montigny, Paris*—Manufacturer.

Artificial flowers; head dresses; flowers and fruits.

1225 Fontaine, Fontaine, 16 *Rue des Capucins, Lyons* (*Rhône*)—Manufacturer.

Specimens of silks for vestings; plain and figured velvets; figured velvet ribbons, and borders for ornaments of ladies' dresses; bonnets and caps, "velours épingle," in all the different qualities; damasks and brocatelles for furniture, and other novel fabrics.

1226 Fontaine, Felix, *Rue de Jeuneur, Paris*—Manufacturer. (Agents, Eyles, Evans, & Co., *Ludgate Street.*)

Specimens of corsets woven on patent loom, without seam, called "plastic bodice," adapted to the different conformations of the body, with a view to health and elegance. Exhibited for workmanship and cheapness.

1227 Fontaine, Paul Louis, 56 *Rue du Faubourg St. Honoré, Paris*—Manufacturer.

Screws for fastening the hose of fire-engines or watering machines. Loop-joint for conveying water. Watercocks; floating-cocks, with appendage. Valve. Carcass of a piston-pump.

1228 Forton-Duponceau & Co., *Chattemoue* (*Mayenne*)—Producers.

Slate billiard table.

1229 Fouché Le Pelletier, Edmond Edouard François, *Javel, near Paris*—Chemical Producer.

Design representing an apparatus constructed of grit stone and lead, for the better manufacturing of sulphuric acids. This new system effects an economy in the working stock of 80 per cent., and in the production of 35 per cent., with the usual quantities. Mineral and vegetable acids; sulphuret of potassium; chlorate of potash; crystallized arseniate of potash; artificial soda; salts of ammoniac; of barytes, of strontian, of zinc, and of lead. Manure.

1230 Fouqueau, Lecompte, *Orleans* (*Loiret*)—Manufacturer.

Rich billiard table.

1231 Fourdinois, Alexander Georges, 46 *Rue Amelot, Paris*—Manufacturer.

A walnut sideboard in the renaissance style, supported by six hounds, of which two are in profile; in the centre is a large trophy of dead animals; on each side are panels and fruit. The pilasters are adorned with four figures representing the four quarters of the world; on the right is a hunter, and on the left a fisherman, as brackets. The figure on the top represents Abundance; on each side are groups of children reaping and gleaning. Some parts of the wood are tinted to give more life to the carving.

A chair also in the same style as companion to the sideboard.

A chiffonnière in the Louis XIV. style, with marquetrie in copper and tortoiseshell, and gilt ornaments.

A small round table gilt, representing a child climbing the grape vine.

1232 Fox, J. F., *St. Genis Lavel* (*Rhône*)—Manufacturer.

Terra cotta and glass tiles, for admitting daylight into granaries and hothouses. These tiles are sufficiently strong to resist the effects of hailstones, which are often extremely destructive in some of the French departments.

1233 Franc, Son, & Martelin, *Lyons* (*Rhône*)—Silk-spinners.

Various samples of threads, combed wools, fancy twists.

1234 Franche, Charles, 42 *Rue de l'Université, Paris*—Manufacturer.

Two repeating pianofortes, with double forte pedals and improved iron bar, of different shape and mechanism.

1235 Fratin, —, 43 *Rue de Trevise, Paris*—Sculptor.

Group of eagles, in bronze. Tables tripod with feet representing the heads and legs of stags and horses; a stag; a group; stag pursued by dogs; group, two eagles fighting for their prey; a lion bearing off a wild boar.

1237 Friry & Riga, 124 *Rue St. Jacques, Paris*—Manufacturers. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Typographic proof-sheets. Steel composing pins and punches.

1238 Gaass d'Agnen, Victor, *Blind Children, National Asylum, Paris*—Producer.

Geographical maps in relievo. Two boards of raised letter-writing, with bodkins and gratings, &c.

1239 Galy-Cazalat, —, 14 *Rue Charlot, Paris*—Manufacturer. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

A new oscillating engine, patented for Great Britain. A frame containing five manometers, patented in France;

two large manometers; a safety apparatus in cases of boiler explosions, patented in England.

1241 **Gantillon**, C. E., 2 *Rue des Capucins, Lyons* (*Rhône*)—Manufacturer.

Back of a couch, representing the Lake of Como. Back of easy chair, with a view of the environs of Naples. Back of chair: Ganymede and Jupiter's Eagle. Silks for furnishing.

1242 **Gaussen** & Co., 1 *Rue de la Banque, Paris*—Manufacturers.

Specimens of cashmere scarfs, and novelties.

1243 **Gaussen**, jun., **Fargeton**, & Co., 2 *Place des Victoires, Paris*—Manufacturers.

Specimens of shawls: French cashmeres.

1244 **Gauthier, Jean**, 4 *Faubourg Montmartre, Paris*—Japanner.

Lacquered morocco leather of all colours.

1245 **Gauthier, Bouchard**, 14 *Rue du Cloitre St. Marie, Paris*—Producer.

Specimens of ochres of different qualities.

1246 **Germain, Simier**, 20 *Rue Poissonnière, Paris*—Lithographic Printer.

Safety papers, precluding the forgery of bank notes, shares, bonds, &c., engraved on natural steel plates, producing each three or four millions of proofs. It would be impossible for even the manufacturer himself to manufacture two plates exactly alike.

1247 **Gindre, Louis**, 23 *Rue des Capucins, Lyons* (*Rhône*)—Manufacturer.

Plain silks. Satins of various dyes.

1248 **Girard** & Co., 19 *Pont St. Clair, Lyons* (*Rhône*)—Manufacturers.

Silk velvet, of various shades.

1249 **Girod**, Le General, *Chevry, near Gex, Ain*—Producer.

Agricultural produce. Fleeces of merino wool, from the flock at Nuz. The flock at Chevry, by origin a pure Merinos breed, was established in 1798, and has supplied, ever since, numerous breeding rams and ewes, not only to France but also to Wurtemburg, Austria, Hungary, the Crimea, Sweden, Rio de la Plata, and even the English possessions in Australia.

1250 **Girodon**, A., 30 *Quai de Retz, Lyons* (*Rhône*)—Manufacturer.

Specimens of silk cravats. Novelties in taffety, satin, stuffs &c.

1251 **Goddet**, A., 130 *Rue St. Lazare, Paris*—Manufacturer.

Pistol, carbine, and fowling-piece, double-barrelled and four-barrelled.

1252 **Godefroy, Léon**, 4 *Quai National, Puteaux* (*Seine*)—Manufacturer.

Printed fabrics: square shawls and scarfs; dresses and various kinds of stuffs.

1253 **Gorsas & Périer**, *Limoges* (*Haute-Vienne*)—Manufacturers.

Table services in porcelain, and various other articles in white and ornamented china.

1254 **Gradé, Louis**, 9 *Rue Castex, Paris*—Manufacturer.

Two bureaus with shelves. Large shelf-stand. Toilet table. Parlour table of inlaid-work. Working table, &c.

1255 **Grandval**, J. B., *Hôtel Dieu, Rheims* (*Marne*)—Chemist.

Patented pharmaceutical products, tincturing, and alimentary products, obtained in a vacuum by means of a breoctated apparatus.

1256 **Grangoir, Jean Marie**, 22 *Rue St. Appoline, Paris*—Locksmith.

Locks, for strong chests, pocket-books, and room doors, invented by the exhibitor.

1257 **Grassot** & Co., *Place du Collége, aux Chapennes, near Lyons* (*Rhône*)—Manufacturers.

Damasked linen, napkins, table-cloths, &c., for tea, breakfast, and other table services.

1258 **Griffon, Brothers & Sister**, 15 *Quai des Bourbon, Paris*—Dyers.

Specimens of silk fabrics, velvets, ribbons, hosiery, trimmings, laces, blondes, gloves, &c., washed and dyed by a new process, which removes grease and spots of all kinds from the articles previous to dyeing. Specimens of sheep-skins prepared by the same process.

1259 **Grillet**, sen., & Co., 11 *Place Croix-Paquet, Lyons* (*Rhône*)—Manufacturers.

Long Cashmere shawls, white and black.

1260 **Grison**, —, 15 *Rue Bourg l'Abbé, Paris*—Manufacturer.

A planisphere. Different descriptions of lamp and light-house burners.

1261 **Guerlin-Houel**, —, *Grenelle* (*Seine*)—Tanner and Currier.

Japanned, smooth, and grained calf leather.

1262 **Guihery, Deslandelles**, & Co., *Nantes* (*Loire-Inférieure*)—Confectioners.

Pies, pilchards, peas, and various other preserves.

1263 **Guinon**, H. P., *Lyons* (*Rhône*)—Dyer.

Specimen of picric acid. Silks and woollen stuffs, dyed in various colours. Chromatic picture and circle.

1264 **Guyon, Edmond**, 57 *Rue Galande, Paris*—Manufacturer.

Specimen of woollen and cotton blankets.

1264a **Gonse & Magnier**, *Bapeaume* (*Pas de Calais*)—Manufacturers.

Clarifying powder for beer, stout, ale, and porter, &c.

1265 **Hayem**, —, sen., 38 *Rue du Sentier, Paris*—Manufacturer.

Specimens of cambric shirts. Cambric fronts. Collars of all descriptions.—Patented.

1266 **Hennecart, Jules Ferdinand**, 30 *Rue de l'Echiquier, Paris*—Manufacturer. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Model of a bolting apparatus used in the French mills for dressing flour. Specimens of silk and gauzes of various qualities for bolting machines.

1267 **Henry**, H. F., 69 *Rue des Marais, St. Martin, Paris*—Designer for Fabrics.

Manufactured designs for prints and fabrics.

1268 **Herz, Henry**, 48 *Rue de la Victoire, Paris*—Manufacturer.

Pianoforte organ. Grand pianoforte. Semi-grand pianoforte.

1269 **Hindinlang**, —, sen., 24 *Rue des Vinaigriers, Paris*—Wool-spinner. (Agent, J. **Gaury** & Co., 8 *Watling Street.*)

Woollen yarn, cashmere down yarn, spun by machinery. Woollen and cashmere fabrics.

1270 **Houdaille, Joseph**, 225 *Rue St. Martin, Paris*—Jeweller.

Specimens of jewellery in silver, gilt copper, silvered copper, steel, ivory, &c. Specimens for books, furniture, and ornamental book-binding.

1271 **Houette, Adolphe**, & Co., 46 *Rue du Fer à Moulin, Paris*—Tanners.

Specimens of tannery and curriery: japanned calf leather for boots and shoes.

1272 **Humbert** & Co., *Dieuze* (*Meurthe*)—Manufacturers.

Specimens of gelatine.

1273 **Jame, Blanchi, & Duseigneur**, 4 *Rue Désirée, Lyons* (*Rhône*)—Silk-spinners.

Specimens of raw and wrought silks. Silk cocoons.

1274 **Jaulain, Julien**, 11 *Rue d'Albony, Faubourg St. Martin, Paris*—Manufacturer.

Newly-invented organ; pianoforte with "panorgue," which may be placed under the key-board of the pianoforte, and may be annexed and attached without any alterations on the latter. The panorgue may be performed separately, or connected with the pianoforte, and may be adapted to all species of that instrument.

1275 **Jeannin**, —, 81 *Rue de l'Ecole de Médecine, Paris*—Manufacturer.

Twelve billiard sticks.

1276 **Jeanselme**, —, jun., 4 & 6 *Impasse St. Claude, au Marais, Paris*—Cabinet-maker.

Screens. Window-cornices. Easy-chairs, couches, chairs, &c.

1277 **Jeanti, Prevost, Perraud**, & Co., *Rue d'Isly*, and *la Villette, near Paris*—Sugar-refiners.

Specimens of sugar refinery: three loaves of refined sugar.

1278 **Jolly-Leclerc**, —, 38 *Faubourg St. Antoine, Paris*—Cabinet-maker.

Rosewood book-case.

1279 **Jouvin-Doyon**, —, 8 *Boulevard Bonne Nouvelle, Paris*—Glover.

Tools used in the manufacture of gloves. Raw skins. Dyed skins. Leather gloves.

1280 **Jullien**, —, *Tours* (*Indre and Loire*)—Manufacturer.

Trimmings for furniture.

1281 **Jumeau, Pierre François**, 18 *Rue Mauconseil, Paris*—Manufacturer.

Specimens of dolls and dolls' wardrobe.

1283 **Krieger** & Co., 79 *Faubourg St. Antoine, Paris*—Manufacturers.

Furniture for drawing-rooms and dining-rooms, cabinets, sideboards, &c.

1284 **Lacarrière, Auguste**, 9 *Rue St. Elisabeth, Paris*—Bronzer.

Specimens of lustres, sconces, chandeliers, medallions, &c.

1285 **Lachapelle & Levarlet**, *Rheims* (*Marne*)—Spinners.

Samples of combed and carded woollen yarn.

1286 **Lachassagne, Alexandre**, 55 *Rue Meslay*, and *at Limoges*—Manufacturer.

Vases and groups in porcelain biscuit.

1287 **Lahoche-Boin**, —, 162 *Palais National, Paris*—Manufacturer.

Gilt bronze-mounted and ornamented porcelain articles. Engraved and gilt crystals with similar mountings.

1288 **Lalande & Chevallier**, *Maur* (*Sarthe*)—Producers.

Chemical products: Sulphate of soda. Citrate of magnesia. Carbonate of magnesia. Sulphate of magnesia. Sample of dolomia. Oxide of magnesium. Hydroxide of magnesium.

1289 **Lambert & Sons**, *Toulouse* (*Haute-Garonne*)—Manufacturers. (Agent in London, P. **Duperrieu**, 17 *Bridge Street, Southwark.*)

Paletots of felt cloths without seams. Rabbit and lambs' wool hats; grey woollen hats.

1290 **Landon** & Co., 67 *Rue Montorgueil, Paris*—Perfumers.

Aromatic and antimephitic vinegar. Bitter essence (called Misbane).

1291 **Lange-Desmoulin**, —, 32 *Rue du Roi de Sicile, Paris*—Manufacturer.

Specimens of colours: carmine, lake, yellow of chrome, vermillion, cinnabar, madder-lake. The carmine is of singular beauty. This red colour, the extract of cochineal, is now employed in large quantities for all kinds of colouring and painting, on account of its moderate price and superior quality. Its scarlet and carmine lacquers, and its garancine shades possess great brilliancy. The chrome yellows, or chromates of lead, have the finest shades of pale gold which can be obtained in painting; and the cinnabar and vermillion possess shades of great richness. The manufacture of these colours in France is due to the exhibitor. They are of great utility in the manufacture of artificial flowers, their shades being a close approximation to nature; and in lithography their effect is very striking.

[The production of these articles has long formed a highly successful department of French industry. The carmine exhibited is employed to a large extent for colouring artificial flowers, for water-colours, &c. The lakes are used for colour-printing on stone, and are an inferior extract of the colouring matter of the cochineal insect. Some of the specimens of lake are in a semi-crystalline form; these are also used by artists. Specimens of chromate of lead and of French vermillion, both of great brilliancy of colour, are likewise exhibited.—R. E.]

1292 **Lapeyre & Dolbeau**, 1 *Place Romain, Lyons* (*Rhône*)—Manufacturers.

Specimens of figured silks. Damask stuffs and shawls.

1293 **Larcher, Faure**, & Co., *St. Etienne* (*Loire*)—Manufacturers.

Specimens of silk ribbons.

1294 **Larenaudière, Ferdinan**, late **Guyot**, 5 *Rue de Mouton, Paris*—Manufacturer.

Writing inks of divers colours, and for copying letters. A copy of a letter can be taken several hours after it is written with this ink.

1295 **Lefort**, —, sen., 12 *Rue Mauconseil, Paris*—Manufacturer.

Specimens of artificial flowers and fruits.

1296 LAURENÇOT, ETIÉNNE, 8 *Rue Neuve Bourg l'Abbé, Paris*—Brush-maker.

Specimens of brushes of all descriptions, in ivory, bone, and buffalo horn.

1297 LAURENT, FRANÇOIS, 98 *Rue Ménilmontant, Paris*—Carver.

Ornaments for framework. Mosaic and marquetrie for floorings. Large mirror in the Pompadour style, carved and ornamented, ready for gilding. Frame in the renaissance style. Frame, in ebony, incrustrated and gilt by machinery.

1298 LAVERNHE & MATHIEU DIT VERGER, *Uzès (Gard)*—Producers.

Silk spun from cocoons on the system of Verger. The same silk wrought and thrown.

1299 LAVOISY, AMEDEE DESIRE, 180 *Rue Montmartre*—Inventor.

Improved mechanical churn, producing butter in less than ten minutes, so easily set in motion that a child could manage it.

1300 LEBEL, LOUIS, *Soissons (Aisne)*—Inventor.

Tow-boat, with double reversed torsion.

1301 LEBLOND, JN. DES., 5 *Rue St. Louis au Marais, Paris*—Manufacturer.

Lay figures of men and women, with an application of caoutchouc, for artists. Patented.

1302 LECLERCQ, N., 17 *Rue Chapon, Paris*—Manufacturer.

Specimens of gelatine, in white and coloured leaves.

1303 LECOQ-PRÉVILLE, —, 50, 52, & 54 *Passage du Saumon, Paris*—Glove Maker.

Specimens of kid gloves, of various dyes.

1304 LECOQ & RIEDER, *Billom (Puy de Dôme)*—Manufacturers.

Earthenware, and various specimens of ceramic.

1305 LE CROSNIER, MICHEL LOUIS, 7 *Rue Bourg l'Abbé, Paris;* and at *Bourget (Seine)*—Manufacturer.

Specimens of oil-cloths in various colours and patterns. Carpets of all sizes, for rooms, coaches, &c. Table-covers. Imitation leather for visors and tapestry. Black oil-cloth for military caps, hats, and cloaks. Oil-cloth, painted in various colours, with embossed designs for the manufacture of boxes and cases, and for hat-making and bookbinding.

Oiled gauze and silk for use in surgery, and for the manufacture of balloons.

1306 LECUN & Co., *Nimes (Gard)*—Manufacturers.

Floor carpets of all descriptions.

1307 LEDRENEY, CHARLES, *Rue de la Michodière, Paris*—Manufacturer.

Elegant mirrors, with gilt and carved frames.

1308 LEFAUCHEUX, —, 37 *Rue Vivienne, Paris*—Inventor and Manufacturer.

Guns of various descriptions, rifles, fowling-pieces on the exhibitor's new principle, pistols, &c.

1309 LEFÉBURE DUCATEAU BROTHERS, *Roubaix (Nord)*—Manufacturers.

Figured woollen fabrics, for waistcoats. Fancy articles.

1310 LETESTUT, —, 118 *Rue du Temple, Paris*—Manufacturer.

Engines.

1311 LEFÈVRE, —, 21 *Rue Beaubourg, Paris*—Manufacturer.

Specimens of fancy papers.

1312 LEFÈVRE, ELIZE, *Gevrolles (Côte d'Or)*—Producer.

Specimen of wool in tufts.

1313 LEGRAND, DANIEL, *Avesnes-lez-Aubert (Nord)*—Manufacturer.

Samples of cambrics and lawn; samples of hand-spun thread.

1314 LEJEUNE, EMMANUEL, *Rue St. Honoré, Paris*—Manufacturer.

Newly-invented waterproof felt and silk hats.

1315 LEMAIRE, A., 2 *Place du Caire, Paris*—Manufacturer.

Carved and gilt bed and window cornices. Curtain arms, and other ornamental articles.

1316 LEMAITRE, CLOVIS, *Pontfaverger (Marne)*—Manufacturer.

Merino fabrics, plain and dyed, of fine quality.

1317 LOUVET, —, *Soissons (Aisne)*—Manufacturer.

Specimen of dress leather.

1318 LEROLLE BROTHERS, *Rue de la Chaussée des Minimes, Paris*—Manufacturers.

Bronze clocks, chandeliers, cups, lamps, &c.; artistic bronzes, statuettes, groups of animals; fountains; vases, after the antique.

1320 LEROY-SOYEZ, Madame, *Masnières, near Cambrai (Nord)*—Manufacturer.

Bottles of various shapes.

1321 LESSIEUX & SON, *Rethel (Ardennes)*—Manufacturers.

Merino fabrics, plain and dyed.

1322 LETILLOIS, F. L. G., 47 *Rue des Noyers, Paris*—Manufacturer.

Specimens of varnishing and ornamental painting. Painting in imitation of marble, &c.

1323 LEVEN & SON, 43 *Rue de Lourcine, Paris*—Tanners.

Green calf-leather, from the abattoirs in Paris.

1324 LEVERT BROTHERS, *Rethel (Ardennes)*—Manufacturers.

Merino fabrics, plain and dyed.

1325 L'HUILLIER, EUGENE, 86 *Rue St. Martin, Paris*—Manufacturer.

Various kinds of feathers for mantel-pieces; head-dresses; clocks; screens in peacock feathers.

1326 LIENARD, M. J., *Rue Plumet, Paris*—Wood-carver.

A carved walnut-wood clock, representing a boar-hunt. Small basso-relievo, carved in pear-tree, divided into three panels, in which are represented stags, foxes, partridges, &c.; the panels in a rustic frame, ornamented with vegetation, animals, and game attributes, grouped in a picturesque manner. (*Main Avenue.*)

1327 LION BROTHERS & Co., *Place des Petits Pères, Paris*—Manufacturers.

Brocaded woollen or Cashmere scarfs and square shawls.

1328 DU LISCOET, SON, & Co., 42 *Rue Barbet de Soury, Paris*—Producers.

Samples of biscuit-beef. The biscuit-beef is, as its name indicates, an article which combines, in a portable form, the nutritious elements of bread, meat, and other alimentary substances for the restoration of strength and the preservation of health. It is suitable for sailors during long voyages; and troops sent out to countries destitute of provisions. The biscuit-beef may be eaten without preparation, or mixed with water, when a substantial soup is obtained.

1329 LODDÉ, A. A., 50 *Rue Bourg l'Abbé, Paris*—Manufacturer.

Plumes of feathers, and screens of all kinds. Various specimens of feathers.

1330 LOLAGNIER, —, 6 *Rue St. Hippolyte, Paris*—Currier.

Kid, lamb, and sheep-skins.

1331 LUCAS BROTHERS, *Bazancourt* (*Marne*)—Spinners and Manufacturers.

Samples of spun yarn, and plain merinos.

1332 LUCE, PIERRE NICOLAS, *Versailles* (*Seine and Oise*)—Looking Glass-maker.

A chimney-mantelpiece ornamented with mirrors.

Quicksilvered mirrors reflect the heat in the interior of an apartment in the same manner that they reflect light, and they bear intense heat without cracking: this result has been obtained after a succession of trials. Experiments have been made at Versailles, when wood, coal, and coke were burned in the grate successively, with favourable results. The glass chimney-piece removes the objection to a fire-place in summer-time; for by placing before the grate baskets of flowers a pleasing effect is obtained.

This mantelpiece is represented in the accompanying Plate 245.

1333 LUER, A., 19 *Place d'Ecole de Médecine, Paris*—Surgical Instrument-maker.

Surgical instruments for operations of every kind, lithotripsy, amputations, cataracts, &c.

1334 MABIRE, —, jun., *Rouen* (*Seine-Inférieure*)—Agriculturist.

Winter cerealia; red wheat (Spalding); red and white Russian wheats.

1335 MACE, JOSEPH MARIE, 5 *Rue Neuve St. Augustin, Paris*—Corset Maker.

Tick corsets; silk corsets; tick belts.

1337 MAGNIN, J. VINCENT, *Clermont Ferrand* (*Puy de Dôme*)—Producer.

French pastes, viz.: Pates d'Italie and flours, macaroni, vermicelli, semola, fancy pastes; various kinds of azotic grains; boiled vegetable flour; boiled chesnut and rice flour. The best description of hard wheat used for the manufacture of these pastes grows at the foot of volcanoes. The vast plains of Limagne, in Auvergne, were formerly covered by an inland sea, which was successively filled up by the alluvium, lava, and the detritus of volcanoes; thus the soil of the plain of Limagne is almost the only one of its kind in Europe. The semola of this hard red wheat produces pastes which equal in colour, quality, and transparency, the finest paste of Genoa and Naples.

1338 MAILLARD, FLORENTIN, 21 & 23 *Rue Notre Dame de Lorette, Paris*—Manufacturer.

Beds; mechanical sofa-bedsteads; bed called Californian. Patented for the invention and improvement.

1339 MAILLE & SEGOND, 14 *Rue St. Andre des Arts, Paris*—Manufacturers.

Vinegars, mustards, and fruits preserved in vinegar.

1340 MALLAT, JEAN BENOIT, 5 *Rue Neuve, St. François, Paris*—Inventor and Manufacturer.

Everlasting pens, with ruby and diamond points, for teachers. These pens are made in gold and platina, and therefore preclude the possibility of oxidation arising from the ink. The extremity of their nib is formed of a point of ruby, or other equally hard substance. These points resist the action of the file, and even of the hardest stones. The sides of the nib retain always a perfect parallelism; they hold a sufficient quantity of ink in them to last for a long time without the necessity for renewing it; and they prevent all blurting or sputtering on the paper. Persons using these pens should have constantly at hand a small vessel with a sponge well steeped in water, in order that, after being used, they may be wiped and always kept in a clean and proper state for use.

1341 MANIGUET, NICOLAS, *Vienne* (*Isère*)—Manufacturer. (Agent, M. DE FONTAINE MOREAU, 4 *South Street Finsbury.*)

Cloths, leather, wool, and fancy articles.

1342 MANSARD, —, 93 *Rue Richelieu, Paris*—Manufacturer.

Ornamented artistic stoneware.

1343 MINISTERE DE LA MARINE, *Paris.* (Rear-Admiral MATHIEU, Director-General.)

Charts and maps of the coast of France, 216 in number; viz., 184 for the coasts in La Manche, on the Atlantic, and on the Mediterranean, surveyed by the corps of Hydrographical Engineers; and 32 for the coasts of Corsica, surveyed by the officers of the French navy.

1344 MARX & Co., *au Vigan* (*Gard*)—Manufacturers.

Two lithographic stones, one polished on both sides.

1345 MASSEMIN, C. L., 28 *Rue de la Reynie, Paris*—Tanner.

Crusted calf-skins, curried calf-skins, glazed calf-skins, pair of legs, upper leather, and Clarence boots.

1346 MASSE, TRIBOUILLET, & Co., 4 *Avenue de Madrid, Paris*—Producers. (Agent, M. DE FONTAINE MOREAU, 4 *South Street, Finsbury.*)

Stearine acids: wax candles, vegetable wax, paraffine, soaps, &c., produced by distillation. Process patented in England.

The products obtained by this new system of manufacture are exhibited for quality and cheapness. The most common, discoloured, and deleterious fatty matters can be used in the manufacture of the articles.

1347 MASSEZ, —, 24 *Rue Aubry le Boucher, Paris*—Manufacturer.

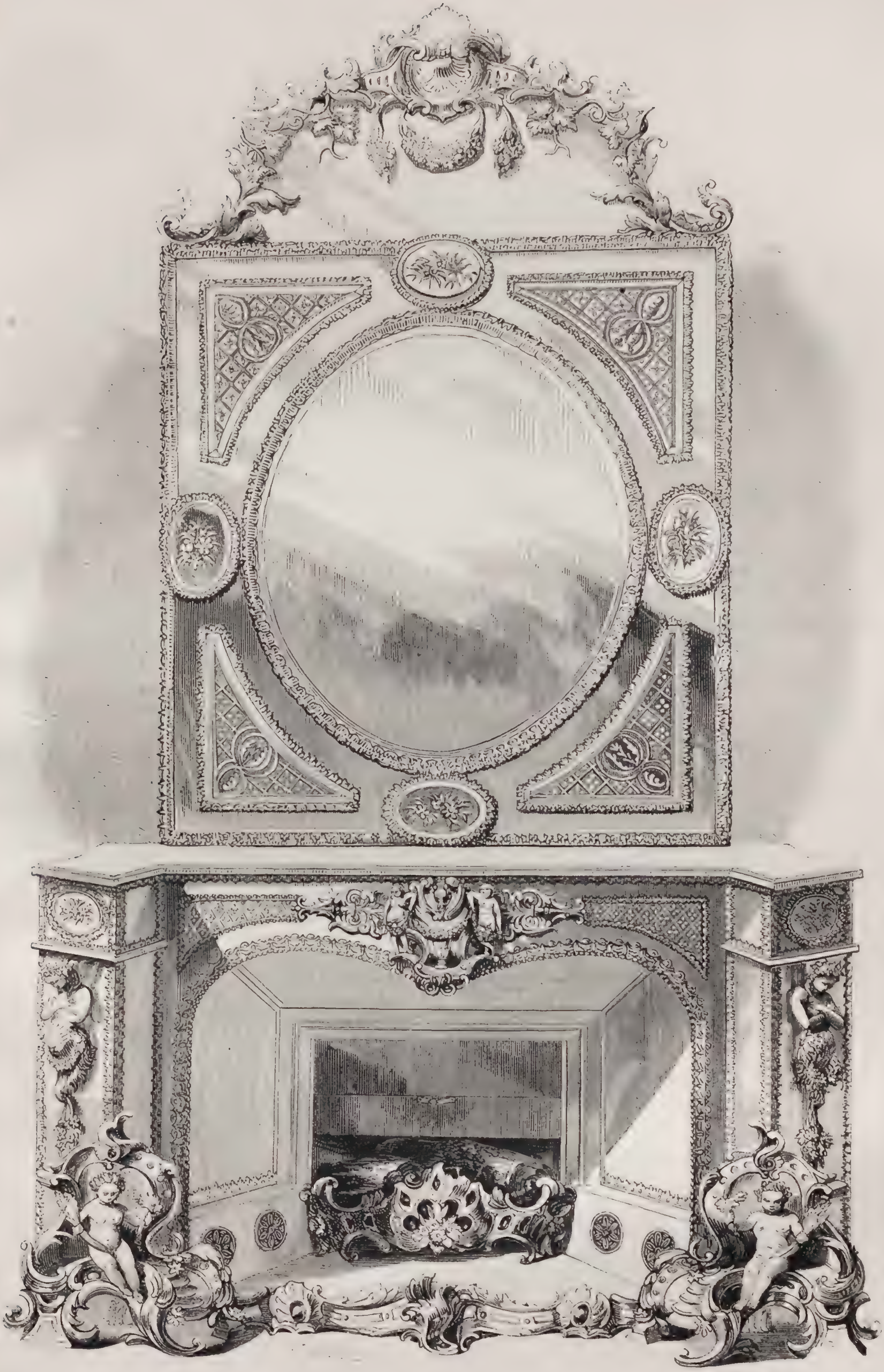
Boots, shoes, buskins, and slippers.

1348 MASSON, ETIENNE, 8 *Place St. Michel, Paris*—Manufacturer.

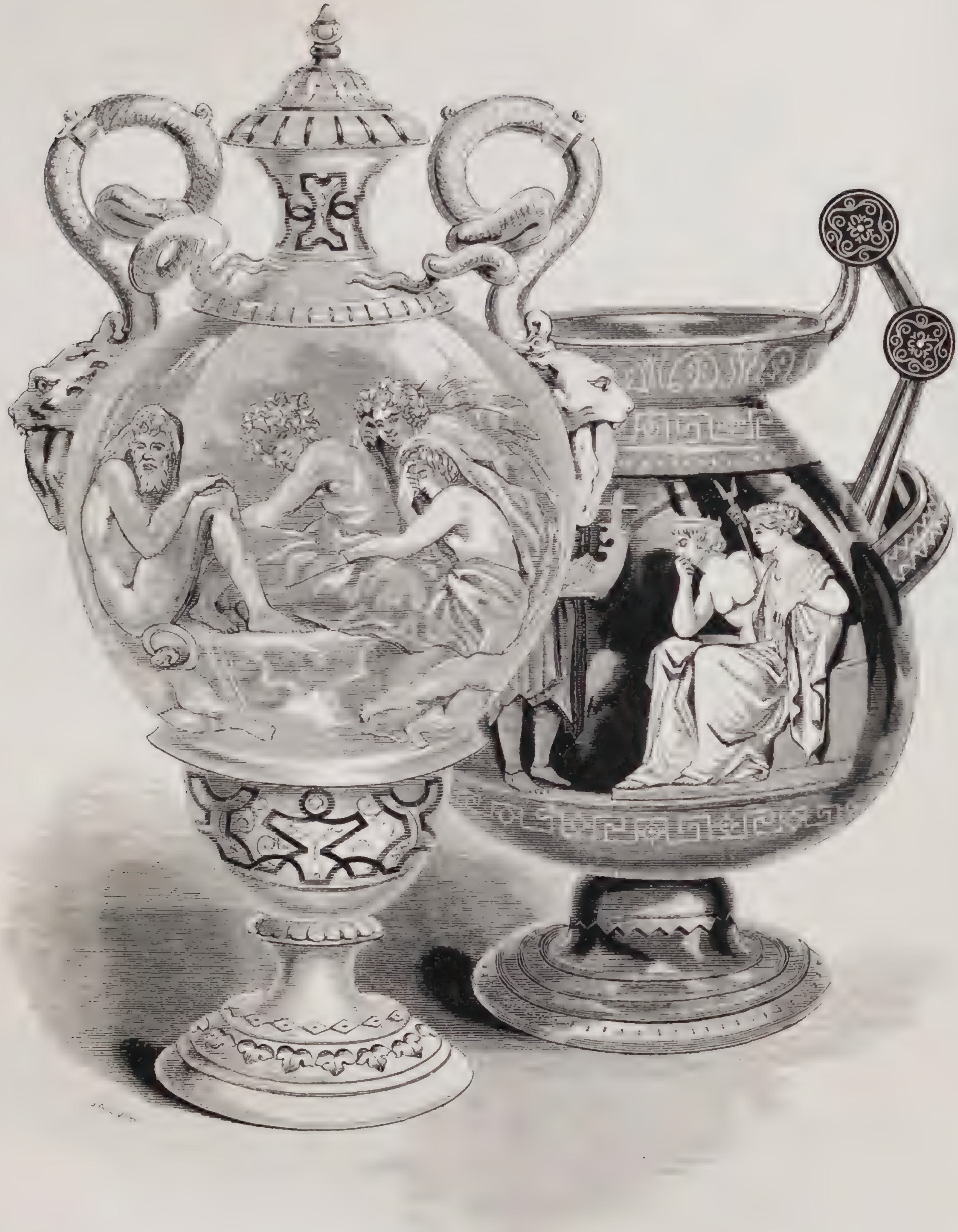
Preserved food: specimens of a new method of preserving vegetables by submitting them to extreme pressure; every particle of moisture being extracted, they may be kept any length of time without losing their flavour, intended for the use of the navy and adopted by the French admiralty.

1349 MATHEVON & BOUVARD, *Lyons* (*Rhône*)—Manufacturers.

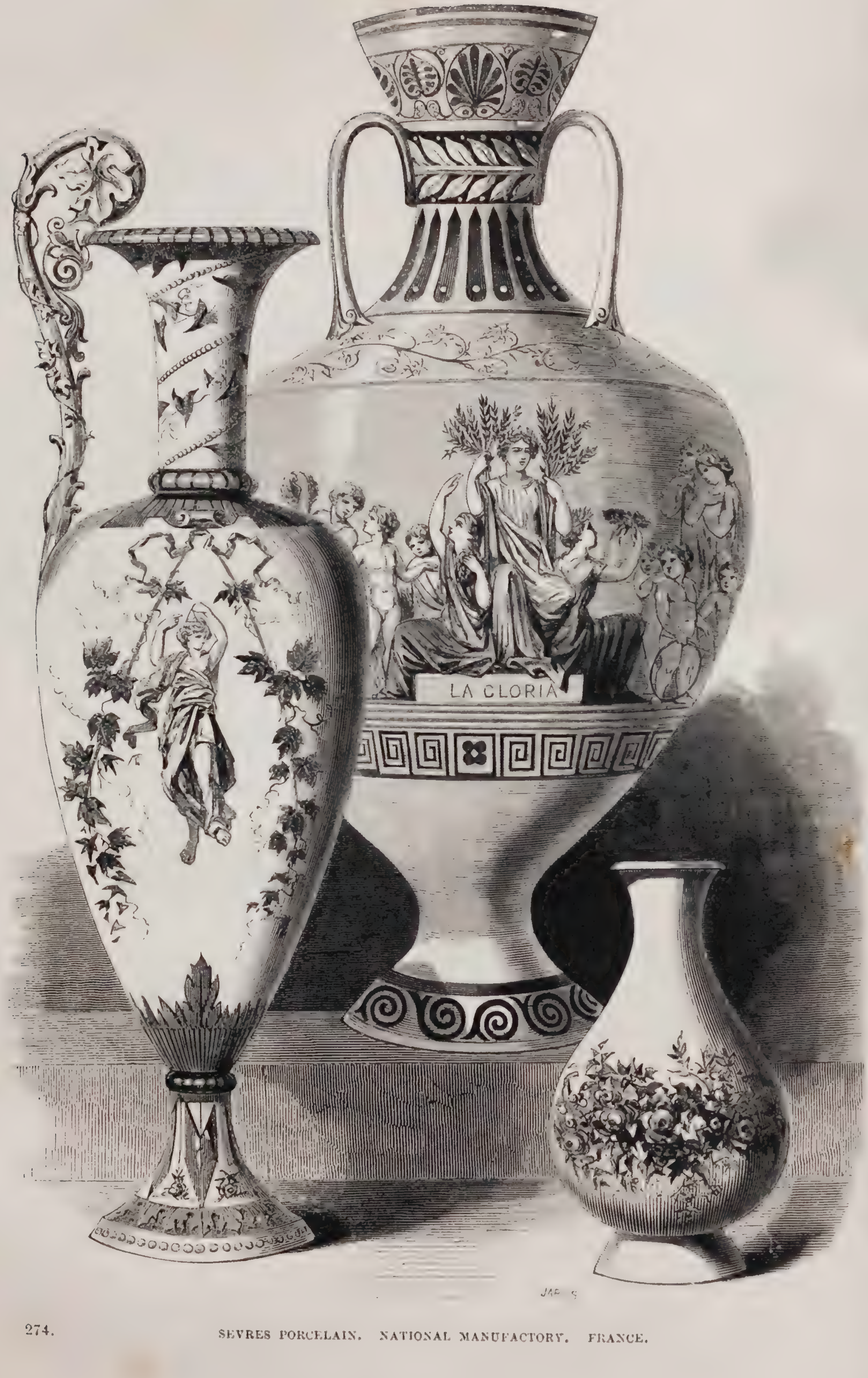
Figured silk-stuffs of various colours for upholstery. Ornamental silk-stuffs, and gold and silver brocade for dresses, waistcoats, and carriage linings.



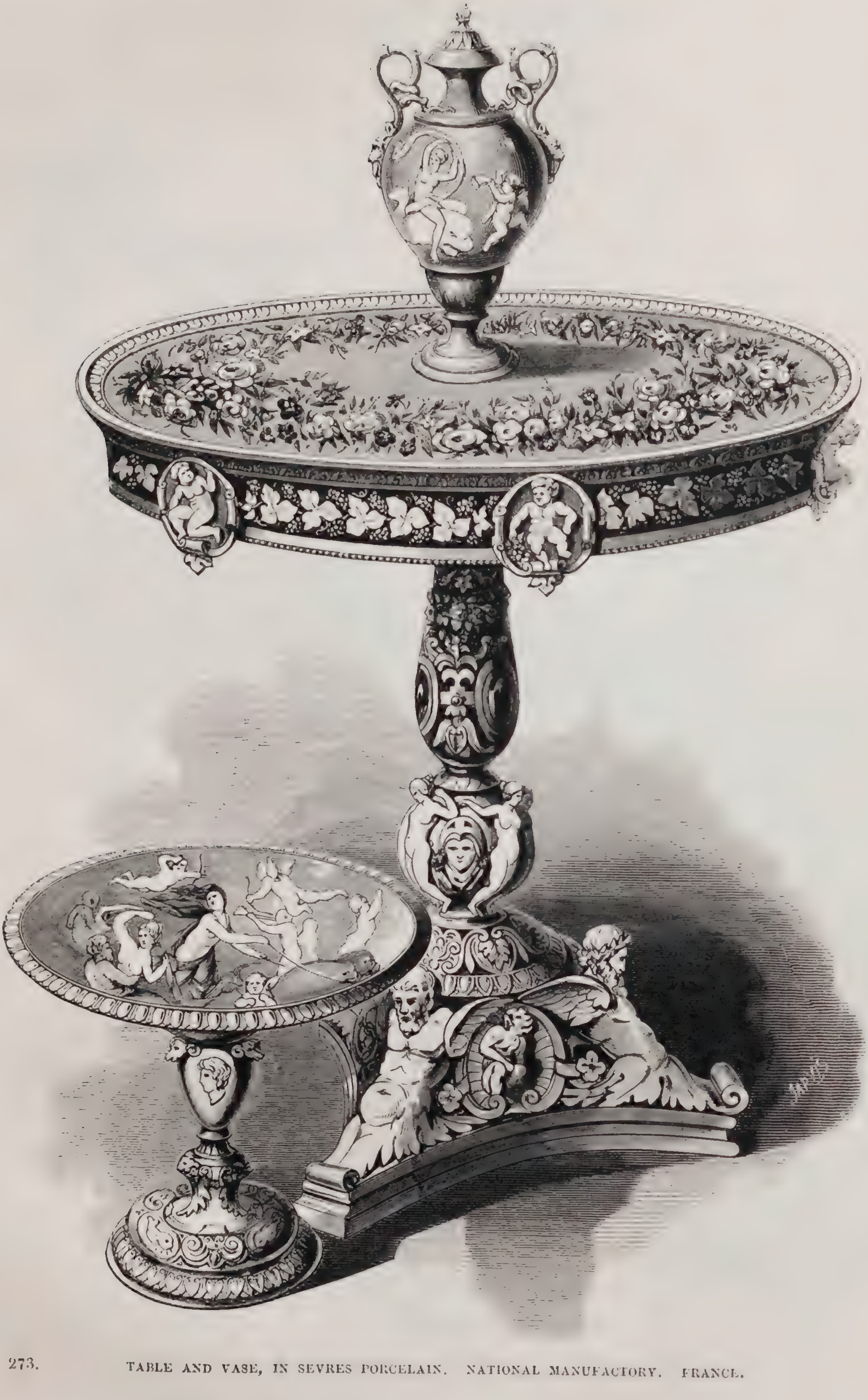
245. A MANTEL-PIECE, ORNAMENTED WITH MIRROR. M. P. N. LUCE, VERSAILLES, FRANCE.



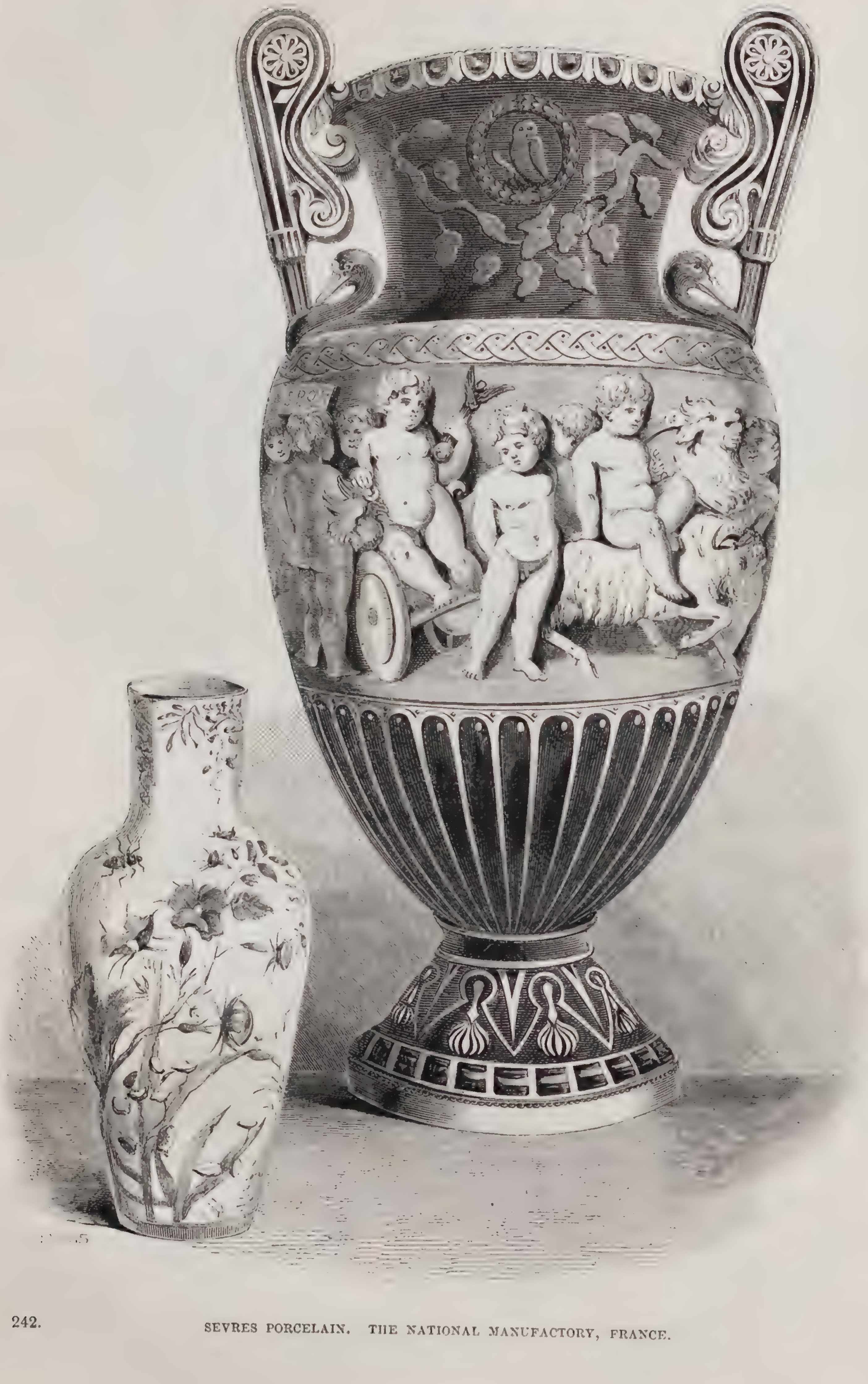
267. SEVRES CHINA. FRANCE.



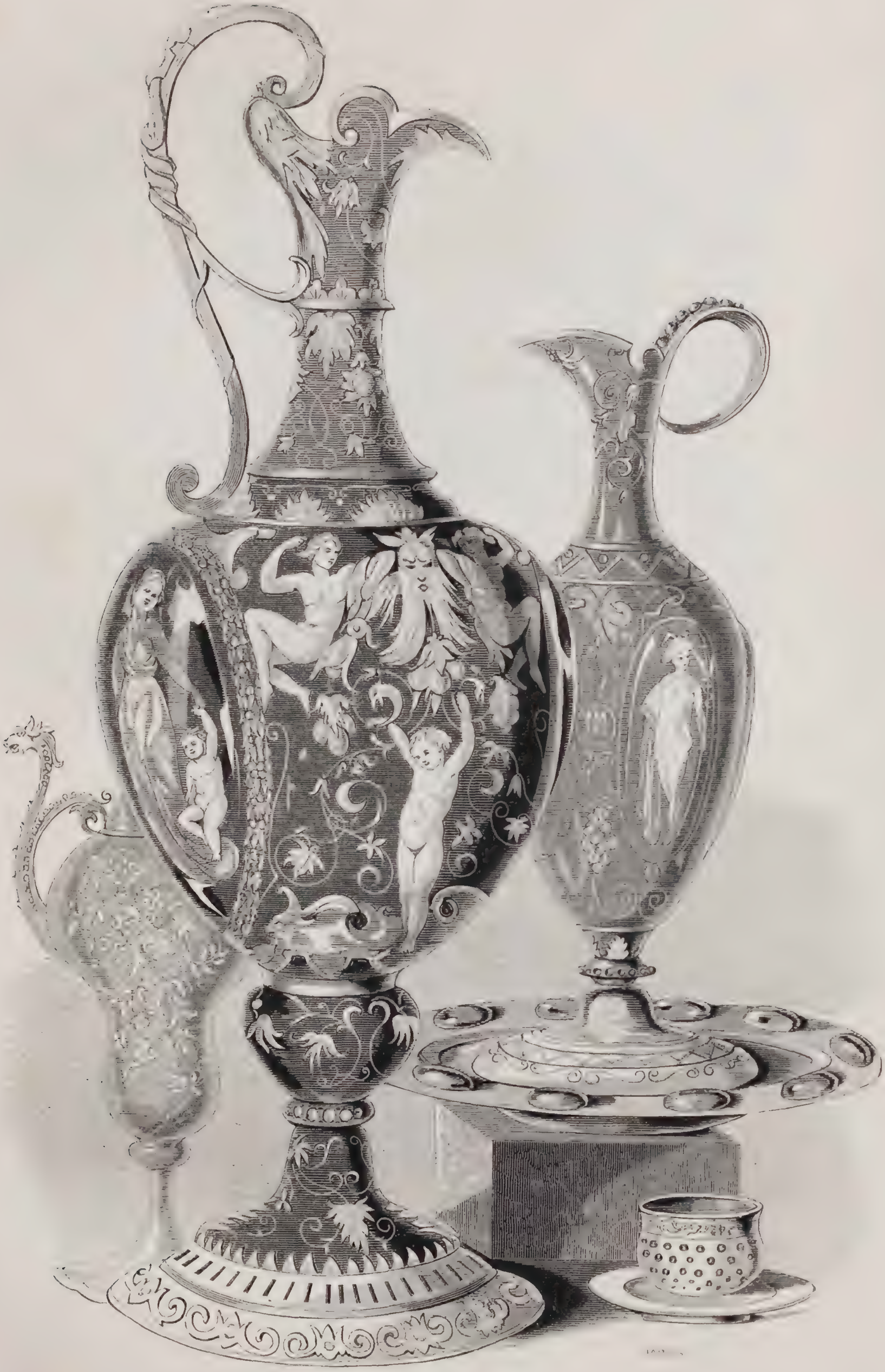
274. SEVRES PORCELAIN. NATIONAL MANUFACTORY. FRANCE.



273. TABLE AND VASE, IN SEVRES PORCELAIN. NATIONAL MANUFACTORY. FRANCE.



242. SEVRES PORCELAIN. THE NATIONAL MANUFACTORY, FRANCE.



SEVRES PORCELAIN. THE NATIONAL MANUFACTORY, FRANCE.

1350 Mathias L. Augustin, 15 *Quai Malaquais, Paris*—Bookseller.

Various publications on the arts and sciences; the scientific industrial library, technology, polygraphy, political economy, agriculture, natural sciences, chemistry, mathematical sciences, natural philosophy, fine arts, and architecture.

1351 Mathieu, Eugene, 132 *Rue Montmartre, Paris* Designer.

Designs for manufactures. Designs for Cashmere shawls, brocaded and printed.

1352 Meier, Frederic, 17 *Rue Tronchet, Paris*—Manufacturer.

Half boots, slippers, and shoes of various kinds.

1353 Méjean, A., *Lyons* (*Rhône*)—Silk-spinner.

Zephyr and grenadine silks. Organzine mantles, white and yellow. Raw silks.

1354 Mercier, —, 21 *Rue d'Anjou au Marais, Paris*—Manufacturer.

Purses, reticules, cash-boxes, and fancy articles.

1355 Méresse, Medard Auguste, *Noyon* (*Oise*).

Four oil-paintings, three of which were copied by a mechanical process from the fourth, which served as a model. The process employed has been brought to such a degree of perfection, that it is impossible to distinguish the original from the copy.

1356 Méro, Joseph Donat, *Grasse* (*Var*)—Perfumer.

Pure olive oil. Aromatic distilled water. Various essential oils. Pomatum extracts of scents. Perfumed oils.

1357 Meurer & Jandin, 29 *Rue Nationale, Lyons* (*Rhône*)—Manufacturers.

Specimens of printed silk handkerchiefs and dresses; and of Indian fabrics.

1358 Moison, F. C., *Mouy* (*Oise*)—Inventor.

Model of a regulator of a water-wheel, with fan, on a reduced scale. Regulator of water-wheel with escapement, this regulator is adapted to the strongest currents.

[The intention of this apparatus appears to be the following:—In large works, where a number of machines are driven by one prime mover, such as a water wheel, it occasionally happens that a whole series are at once thrown out of gear; the result is, that the surplus power expends itself in driving the rest at a much more rapid speed. The intention of the regulating apparatus exhibited is, by its connection with the wheel, to obviate this effect. It also facilitates the stoppage and setting in motion of the wheel.—R. E.]

1358a Miramont, —, 137 *Rue St. Denis, Paris;* and 7 *Calthorpe Street, Gray's Inn Lane*—Chemist.

Specimens of veterinary medicines, for the various diseases of horses and cattle.

1359 Molyn Le Souef, Madame, 36 *Rue Neuve des Petits Champs, Paris*—Manufacturer.

Patent collars, cravats, rosettes, ribbons for orders, &c.

1360 Montessuy & Chomer, 25 *Place de la Comédie, Lyons* (*Rhône*)—Manufacturers.

Plain silks, tartan silk, muslin silk, crape, English crape, &c.

1361 Moreau, A. U., *Mines of Bitumen Schabwiller* (*Bas-Rhin*); and at *Paris*—Producer.

Lamp oil, which gives a more brilliant and clearer light than gas, and does not vacillate, the cost is at the rate of one farthing an hour. Essential oil for varnish, which dissolves caoutchouc and copal in three days' time. Oil for machinery, which does oxidize metals. White grease for waggons, railroads, &c., which has been tried with success on the South Eastern Railway. Soaps and pastes; this branch of industry is destined to become very important in England, where a company is now forming for working the bituminous matter of the lake of Trinidad, a privilege granted by the English Government for thirty years.

1362 Mornieux, Francois, 31 *Rue Montdétour, Paris*—Manufacturer.

Galoons and silk buttons for men's clothing.

1363 Mourgue & Bousquet, *St. Hippolyte du Fort* (*Gard*)—Silk-throwsters.

Skeins of raw silk, and samples of organzin.

1364 Moutier Le Page, 11 *Rue Richelieu, Paris*—Gunsmith.

Guns, carbines, pistols, swords, daggers, hangers, Damascus sword-blades and shields.

1365 Muller, Theodore Achille, 42 *Rue de la Ville l'Evêque, Paris*—Organ Builder.

Two travelling organs, in mahogany and rosewood cases. These diminutive organs, which are constructed in such a manner that they can be easily folded and brought into a narrow space, may be carried like a common trunk from place to place.

1366 Musard, L., 22 *Rue Buffaut, Paris*—Manufacturer.

Talabot's machine for the preparation of silk.

1367 National Manufactory of Beauvais, *Beavais* (*Oise*)—Producer.

Furniture tapestry for elbow chairs, chairs, sofas, and screens. A variety of carpets in Turkish, Peruvian, and Chinese styles.

[The carpet manufactory of Beauvais, a town of considerable note, was founded by Colbert in 1664. A certain quantity of carpets is made for the public establishments, and the surplus is sold to the public. This manufactory is still in the hands of the French Government. Artists of talent are generally employed to make designs for the productions, and those exhibited indicate the general character of these beautiful articles.]

1368 National Manufacture of Gobelins, *Paris*—Producer. (Depôt in London, 13 *George Street, Hanover Square.*)

Tapestry, of the high warp, and velveted, called de la Savonnerie. Carpets.

[The magnificent carpet manufactory of the Gobelins is conducted by the French Government. It was bought from the Gobelin family by Colbert in the year 1677, who there established a large manufactory of tapestry similar to that of Flanders. The renowned artist Lebrun was appointed director, and under his administration were produced "Alexander's Battles," the "Four Seasons," and the "Four Elements," which have remained the admiration of the world. The two brothers, Gilles and Jean Gobelin, introduced the art of dyeing scarlet from Venice into France under the reign of Francis I.]

1369 National Manufacture of Porcelain and Stained Glass, *Sèvres*—Producer. (Depôt in London, 13 *George Street, Hanover Square.*)

Pictures or copies of pictures by great masters, done by various artists attached to the Sèvres Manufactory. Artistic vases, painted and ornamented. Artistical articles of China furniture. Complete services for tea and coffee. Various articles. Enamels. Cups, or little tableaux, in enamel, by various authors.

Groups of these objects are represented in the Plates 241, 242.

1370 Nachet, —, 16 *Rue Serpente, Paris*—Optician.

A large microscope, with universal joint, moveable stage, and micrometer adjustment.

Moveable mirror for obtaining light under all angles.

A new microscope for chemical observations.

A new microscope for directing the dissections of transparent and opaque bodies. A small common microscope.

1371 Nillus, —, *Graville* (*Seine-Inférieure*)—Engine-builder.

Sugar-cane crushing machine.

Double lifting and portable pump. This apparatus is constructed especially for excavating, and may be applied with equal advantage to the shipping service. It discharges a greater volume of water with force, and acts with the same facility in muddy and sandy as in clear water; it combines strength and durability with lightness and simplicity, and may be set in motion without priming with water. These results have been obtained by means of improvements which consist principally in a frictionless piston, composed of different materials, according as it is to be used for hot or cold water.

1372 Noyé, Francois, *Quai de Retz, Lyons*—Manufacturer.

Specimens of preserved food: vermicelli, chesnuts, and potatoes.

1373 Nys & Co., 132 *Faubourg du Temple, Paris*—Manufacturers.

Specimens of japanned calf leather for boots and shoes.

1374 Oudart, Louis, Son, & Boucherot, 42 *Rue des Lombards, Paris*—Manufacturers.

Fruits preserved with steam and divers sugars.

1375 Oudin & Co., *St. Herblain, near Nantes* (*Loire-Inférieure*)—Producers.

Sample of solidified milk.

1376 Oudin, J. A. F., *Quai de la Fosse, Paris*—Producer.

Butter preserved with and without salt.

1377 Paillette, Pierre, 29 *Rue Grenier St. Lazare, Paris*—Brush Maker.

Hair and clothes brushes, in wood, buffalo-horn, and ivory. Fancy brushes.

1378 Paret, Marius, *Sedan* (*Ardennes*)—Manufacturer.

Specimens of broad cloths, kerseymere, and satins.

1379 Paris, C. E., 111 *Rue de Berry* (*Seine*)—Manufacturer.

Samples of galvanized sheet-iron. Enamels in a rough state.

1380 Patriau, Charles, *Rheims;* Depôt, *Paris*—Manufacturer.

Woollen and cotton fabrics for waistcoats, cloaks, dresses, &c.

1381 Paturbe, Lupin, Seydoux, Sibier, & Co.; Depôt, *Paris*—Manufacturers.

Pure wool, and woollen and silk fabrics. Barege. Muslins. Merinos. Summer materials.

1382 Pauwels, Antoine, 179 *Faubourg Poissonnière, Paris.*

Apparatus for regulating the pressure and flow of gas used in the public streets. The lighting up of a town is effected by pipes placed underground, which transmit the gas where required; but the consumption varying constantly, the dimension of the pipes cannot be regulated beforehand in such a manner as to avoid, notwithstanding the ordinary regulator of the gas-works, the introduction of a quantity larger than necessary for the wants of each division. This superabundance produces in certain parts too great a pressure, which causes a considerable waste of gas. The object of the apparatus, or gas moderator, is to regulate this supply. It is placed on the pipes underground, and, by a very simple mechanism, maintains a constant and invariable pressure, whatever may be the rapidity of the flow of gas. This affords a great advantage with respect to security and salubrity by diminishing the escape of gas. The greater regularity of supply effected by this new invention, insures a better regulated light. The gas moderator is eminently useful for hilly localities, its construction being solid and durable.

Gas regulator for consumers, for preserving an equal flame. Retort in fire-clay for the use of gas-works, new invention. Patented.

1383 Pellerin, Charles Alexandre, 18 *Cour des Petites Ecuries, Paris.* (Agent, Mr. A. Brown, 26 *Charles Street, Berners Street.*)

Melophones of various kinds (instruments imitating the human voice).

1384 Pentugol & Chassang, 21 *Rue de Gobelins, Paris*—Manufacturers.

Leather:—Legs of boots; upper-leather for shoes; black and japanned calf leather.

1385 Pérot, Giulio Giacomo, 13 *Rue des Portes, Paris*—Manufacturer.

Compositions and models of ornaments for jewel engravers.

1386 Picarel, V., 11 *Rue St. Jean, Paris*—Manufacturer.

Specimens of wood carving and gilding.

1386a Perreyron, —, *Rue Neuve des Petit Champs, Paris*—Inventor. (Agent M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Specimens of a new kind of button, called "button clasp," which can be fixed to clothes without sewing. Invented by the exhibitor. Patented, February, 1851. This invention consists in a metal plate, or under button, on which is rivetted a small iron stem forming a loop for fixing the button shank, which is solidly fastened by flattening its extremity, which is then passed into the metal and rivetted.

The method of using this invention consists in simply making a hole in the cloth, which should be first lined with canvas between the two folds, in which is inserted the button shank, and on the other side is placed the button-clasp; a mode of fastening not hitherto surpassed. If the coat is a military one, it offers the advantage of being able to take off the buttons in order to better clean it without risk.

The inventor has also improved the buttons of braces; instead of making stitched button-holes, the centre of the button is punched, and through the hole is passed a small piece of iron wire, which is rivetted, and thus prepared to receive the button clasp. It is principally adapted for uniforms.

1387 Peyron, Silvain, *Rumengol, near Brest* (*Finistère*)—Manufacturer.

Sieve-hoops of beech, sawed and bent by steam.

1388 Pichard, A. F., 26 *Rue des Blancs Manteaux, Paris*—Jeweller.

Ornaments for head-dresses. Articles of jewellery. Imitation of gold and precious stones.

1389 Picquot, Eugène, *Monville* (*Seine-Inférieure*)—Cotton-spinner.

Bundles and "cops" of unbleached mule-spun yarn.

1390 Piedagnel, Mlle. Blanche, 9 *Quai Voltaire, Paris*—Producer.

Copy on porcelain of the Virgin, of Sasso Ferrato.

1391 Pimont, P, *St. Leger du Bourg, Denis* (*Seine-Inférieure*)—Inventor. (Agent M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Feeding apparatus applicable to steam-engines, with high or low pressure, dyeing vats, &c. This apparatus effects a great saving of fuel, a more regular working of the engine, a useful employment of waste heat, occupies a small space, and is speedily erected. Patented in England, France, Belgium, and Austria.

1392 Pinsonnet, Adolphe Léon, 34 *Rue St. Marguérite, St. Germain, Paris*—Wood Carver.

Carved wooden chair, renaissance style.

1393 Piques, —, *Velars-sur-Ouche* (*Côte-d'Or*)—Manufacturer.

Articles of pasteboard.

1394 Plasse, —, 67 *Rue St. Honoré, Paris*—Manufacturer.

Patent spring portable water-jets. Sanatory apparatus to be placed on a table, window, &c. If chlorine is mixed with the water it becomes a useful preservative against epidemics.

1395 Plon Brothers, *Rue de Vaugirard, Paris*—Producers.

Printed books, albums, plans, almanacks, and engravings.

Ten frames containing vignettes and various impressions; 27 albums of wood-engravings; 126 volumes, from the large folio to the smallest microscopic type; large bills, printed on a single sheet of nine feet wide and five feet high. Rolls of paper-hanging, printed by machinery.

1396 De Poilly & Co., *Folembray Glass-works, near Coucy* (*Aisne*)—Manufacturers.

Various specimens of bottles, glasses, and glass-wares. This manufactory is composed of four ovens for melting, and 24 for baking the glass. The annual production amounts to above 3,000,000 of bottles of all descriptions; 900 workmen are employed.

1397 Poinsignon, —, *Rue Neuve St. Martin, Paris*—Manufacturer.

Imitation tortoiseshell combs. Specimens of articles made of horn, such as boxes, baskets, opera-glasses, frames, lamp-shades, &c.

1398 Poirier, Pierre, *Châteaubriant* (*Loire-Inférieure*)—Shoemaker.

Water-proof boots, shoes, and gaiters, for the especial use of sportsmen. The waterproofing is produced by a coating of caoutchouc and other ingredients.

1399 Poisat & Co., 19 *Rue d'Enghien; and Folie Nanterre* (*Seine*), *Paris*—Manufacturers.

Model of an improved distilling apparatus, with metallic bath. Stearic acid in cakes. Stearic acid in loaves, and candles. Sulphate of alumina. Pure alumina. Sulphuric and nitric acids, &c.

1400 Pommier, Pierre, 22 *Rue Neuve Coquenard, Paris*—Manufacturer.

Chemical products; varnish for carriages.

1401 Potonie, Léon, 5 *Rue Neuve St François, au Marias*—Manufacturer. Depôt, 20 *Red Lion Square.*

A variety of clocks of all descriptions, made of various materials.

1402 Potton, Rambaud, & Co., 18 *Rue Lafont, Lyon* (*Rhône*)—Manufacturers.

Specimens of figured silk stuffs; damask cravats; mounted parasols; different stuffs. Portraits of the Royal Family of England.

1403 Ponson, Claude, 21 *Rue des Deux-Angles, Lyon* (*Rhône*)—Manufacturer.

Plain silks, of various dyes.

1404 Popelin, Ducarre, 137 *Boulevard de l'Hôpital, Paris*—Manufacturer. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Specimens of artificial charcoal.

1405 Poussielgue, Rusand P., 34 *Rue Castelle, Paris*—Manufacturer.

Chandeliers, shrine for relics, lamps, trays, ewers, chalices, &c.

1406 Pradier, Joseph, *Annonay* (*Ardèche*)—Silk-spinner.

Specimens of raw white silks.

1407 Pradier, Jacques, Member of the Institute of Paris—Sculptor.

Marble statue of Phryne. Word of Advice from Venus to Cupid. Bronze group. Pandora, a bronze statuette. Exhibited for execution.

1408 Pradine & Co., *Reims* (*Marne*)—Manufacturers. (Agents, J. S. de Gaetan & Co., 3 *Bow Lane, Cheapside.*)

Specimens of woollen yarn combed by machinery. Refuse white thread and wool. Skeins of combed and spun woollen yarn of various shades and mixed colours.

1409 Preinsler, Jules F. Victor, 20 *Rue St. Fiacre, Paris*—Designer.

Specimens of designs for handkerchiefs, dresses, and all kinds of printed fabrics.

1410 Pretot, Louis Hyppolite Edmond, 3 *Rue Harlay, au Marais, Paris*—Manufacturer.

Specimens of cabinet work, inlaid, and bronze work.

Different articles of furniture, such as glazed cabinet, kneeling chair, table, &c.

1411 Prin, Adolphus, *Nantes* (*Loire-Inférieure*)—Manufacturer.

Black and yellow calf-skins. Exhibited for quality and cheapness. The factory of the exhibitor produces yearly 60,000 calf-skins, manufactured by a particular sort of machinery.

1412 Prudent, L., 29 *Rue du Ponceau, Paris*—Optician.

Tortoiseshell and buffalo-horn opera-glasses of all sorts, made by a new process; said to be capable of withstanding the changes of weather, and not liable to break or get out of order.

1413 Pujade, Jean, *Amélie-les-Bains, near Arles-sur-Tech* (*Pyrénées Orientales*)—Physician.

Series of apparatus, illustrating a new mode of treatment for the affections of the chest, and other chronic diseases; made use of by the exhibitor in his medical institution at Amélie-les-Bains. Album, containing a series of drawings representing the new apparatus almiatric-sulfuro-pulmonary (almiatric-sulfuro-pulmonaire); various new apparatus for administering shower baths, &c.

The model establishment, conducted under the superintendence of the exhibitor, enjoys the temperature and climate of Italy; orange trees and cactus plants flourish in the open air. The interior of the house is heated by the warmth of the springs appropriated to the purpose of winter bathing.

1414 Puzin, —, *Beaumont* (*Seine and Oise*). Depôt, 135 *Rue St. Denis, Paris*—Manufacturer.

Lace and trimmings for coach-lining. Lace for liveries. Designs for armorial bearings.

1415 Queru, Adolphe, & Co., 14 *Boulevard, Poissonnière, Paris*—Designer.

Designs for fabrics of all kinds, carpets, and embroidery.

1416 Rabourdin, —, 88 *Rue des Marais St. Martin, Paris*—Manufacturer.

Braces; garters; silk and India-rubber texture for ladies' stays.

1417 Raguenet, Roland, 9 *Rue des Capucins, Paris*—Manufacturer.

Cast-steel carding-combs. Patented in France.

1418 Bance, Balthazar, *Rue Croix des Petits Champs, Paris*—Producer.

Bound books:—The Hotel de Ville (Town Hall) of Paris; St. Eustace Church; Parallels of the Streets of Paris; Encyclopædia of Architecture.

1419 Ramus, Joseph Marias, 33 *Rue de l'Oueste, Paris*—Sculptor.

Marble group, representing Cephale and Procris.

1420 Rabiot, —, 2 *Rue de l'Ecole de Médecine, Paris*—Manufacturer. (Agent M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

Models of bedsteads and apparatus for invalids.

1420 aRoussy, C., *Ganges* (*Hérault*)—Agriculturist.

Specimens of cocoons and raw silk of all kinds.

1421 Rastouin, —, *Blois* (*Loire and Cher*)—Engineer.

Patent double receiver for the introduction of the axletrees of carriages, invented by the exhibitor.

1422 Raucher, L., jun., *Saumur* (*Maine and Loire*) Manufacturer.

Pulverised horn. Pulverised black, from carbonized bones. Pulverised bones in their natural state. Black animalized manure. Pulverised flesh.

1423 Récy, Claude M. Hubert, *St. Amour* (*Jura*)—Producer.

Instruments for the use of deaf, blind, and paralysed individuals.

1424 Redelix, Henry, 25 *Rue Notre Dame de Nazareth, Paris*—Manufacturer.

Screw-buttons, fastened without seam.
Fashionable articles for dresses.

1425 Redier, Antoine, 2 *Rue du Châtelet, Paris*—Clock-maker.

Clocks of various descriptions. Travelling repeating clock, new invention. Travelling repeating alarum clock, the striking part on a new principle. Works of a repeating clock; patented. Silver double-cased pocket chronometer. Watch for common use, prime mover on a new plan. Instrument for dividing the circle in equal parts for drawing. Pocket alarum watches. Guide for firemen of steam-engines. Horograph, an instrument for the use of railways for printing the time of the arrival and departure of the trains for each station. Metrograph, or controller of the speed of the trains; this apparatus indicates at every moment, and at every mile, the speed of the train, and the hours of arrival and departure at each station. Double marine chronometer, which marks the hour in all degrees of temperature, without the aid of the compensating balance. Patented.

1426 Regard Brothers, *Darbes* (*Ardèche*)—Spinners.

Specimens of cocoons, and raw and wrought silk, for silk and plush fabrics.

1427 Régny, Leon, & Co., *Loquefort la Nerthe* (*Arles*)—Manufacturers. Depôt, *Marseilles* (*Bouches du Rhône*).

Hydraulic lime and cement, produced by the process of M. Henri de Villeneuve, Engineer. By this new process a superior hydraulic lime may be obtained from all carbonates of lime, without the addition of other substances, and whatever proportion of insoluble bodies they may include. Hitherto hydraulic lime could only be extracted from certain carbonates of lime not frequently met with in nature. The cement exhibited may be obtained of different degrees of rapidity in setting; some requiring six hours, others only a few seconds.

[The ancient Romans paid particular attention to their cements and mortars, the durability of which is attested by the remains of their walls; their renowned hydraulic cement is said to have been prepared with a mixture of volcanic sand and lime. Hydraulic cements are such as have the property of hardening under water, and are prepared by the calcination of argillaceous lime-stone, or with mixtures of lime and argillaceous earth. It appears from the acute researches of M. Vicat, that silica is an essential element in the formation of a good hydraulic cement, the setting of which he attributes to the basis silicate of lime passing to the state of hydrate by the absorption of water, for he found that alumina and magnesia did not give to lime the property of hardening under water, although they do not prevent the process of induration; he believes that the oxides of iron and manganese do not contribute in any way to the goodness of the cement.—W. D. L. R.]

1428 Ribert, —, Inventor.

Clyso-irrigator.

1429 Reichmann, Alehandre, 21 *Rue St. Benoit, Paris*—Manufacturer.

Papers in rollers divided into squares, for reducing designs; memorandum books quadrilled for sketches.

1430 Reidon, Emilieu, *St. Jean de Valeriscles* (*Gard*)—Producer.

Specimens of raw silk, and twisted silk for satin.

1431 Renard, L., *Rue des Gravilliers, Paris*—Manufacturer.

Black varnish. Copal, for fans, for sculptures, and French siccative.

1432 Répiquet & Silvent, *Place de la Croix Caquet, Lyon* (*Rhône*)—Manufacturers.

Novelties for waistcoats; galoons, velvets, and silk trimmings.

1433 Réquillard, Roussel, & Chocqueel, *Tourcoing* (*Nord*); *Aubusson* (*Creuse*); *and* 20 *Rue Vivienne, Paris*—Manufacturers.

Coarse yarn for carpets; fine yarn for furniture. Tapestry curtain and panel, &c. Specimens of combed merinos, wrought by machinery.

1434 Reulos, Armand Joseph, 15 *Rue Geoffroy St. Hilaire, Paris*—Tanner and Currier.

Curried horse-hide straps.

1435 Reynièr Cousins, 19 *Rue Puits Gaillot, Lyon (Rhône)*—Manufacturers.

Neckerchief, shawls, and collars of various kinds of stuffs.

1436 Richez, Madame, 323 *Rue St. Honoré, Paris*—Manufacturer.

Specimens of silk and tick corsets.

1437 Ringuet-Leprince, Auguste Emile, 9 *Rue Caumartin, Paris*—Manufacturer.

Drawing-room sideboard, with four doors, in ebony and gilt bronze, with medallions in carved ivory; style of Louis XIV.; 6 feet long by 4½ feet high, intended to support groups of figures, or vases.

Medal cabinet in ebony and pear-tree; style of Elizabeth; 4 feet wide by 8 feet high, with two doors, supported by a side table of the same materials, ornamented with statuettes after original designs; hard stones placed as medallions, and may be changed for medals or portraits at pleasure.

Ebony table, inlaid with tortoiseshell, brass, silver, and ivory, and ornamented in gilt bronze, with nine historical portraits: Louis XIV. and his ministers Colbert and Louvais, with Racine, Molière, Turenne, Duquesne, Descartes, and Lebrun. Gilt elbow-chair, covered with tapestry.

1438 Risler & Son, *Cerney (Haut-Rhin)*—Manufacturer. (Agent, M. de Fontaine Moreau, 4 *South Street, Finsbury.*)

A machine called "a depurator," with a frame containing the produce of that machine. New preparatory machine for the winding of cotton, called the Equivalent.

1439 Rivart & Andrieux, 1 *Rue de Normandie, Paris*—Manufacturers.

Furniture, with soft paste incrustations of porcelain.

1440 Robert, Alexandre, & Co., *La Villette, near Paris*—Refiners.

Plate, small ingots, pieces of ingots forged in brass. Pure tin. Pewter box. Roll of tin-foil for looking-glasses, &c.

1441 Robert, Guerin, *Pont-Faverger (Marne)*—Manufacturer.

Unbleached and dyed merino fabrics.

1442 Robert, Faure Charles, 25 *Rue de Cléry, Paris*—Manufacturer.

Worsted lace of all colours; guipure silk lace, black and white worsted ribbons.

1443 Robert, Mathieu, *Pont-Faverger (Marne)*—Manufacturer.

Specimens of unbleached and dyed merino fabrics, exhibited for quality and strength.

1444 Robert-Werly, & Co., *Bar-le-Duc (Meuse)*—Manufacturers.

Seamless stays, manufactured on a new system.

1445 Robichon Brothers, & Co., *Givors (Rhône)*—Manufacturers.

Specimens of window glass of various colours.

1446 Rokec, Louis, 10 *Rue du Griffon, Lyon (Rhône)*—Inventor.

Silk meter, an instrument, the object of which is to ascertain the different qualities of raw and wrought silk.

1447 Robin, Louis, 32 *Rue Grenétat, Paris*—Manufacturer.

Various articles in bronze, cups, bouquets, &c. Bronze clock-bells of different designs.

1448 Roger & Son, *La Ferté-souss Jouarre (Seine and Marne)*—Manufacturers and Proprietors.

Tiles of various qualities; millstones of all descriptions and dimensions; draining-tiles; the produce of the quarries of the exhibitor.

1449 Roger Brothers & Co., *Brie-le-Château (Oise)*—Wool-spinners.

Assortment of woollen threads.

1450 Roissard, Julien Marie, 58 *Grand Rue, Finistère (Brest)*—Cutler.

Various specimens of cutlery. Surgical instruments, chiefly intended for surgeons in the marine service.

1451 Ronchard, Siauve, *St. Etienne (Loire)*—Gunsmith.

Double-barrelled gun, with 15 shades of damask on each barrel, at equal distances. All the shades are different, and are produced by iron and ornamentation.

1452 Rosselet, Chas. Philippe Honoré, 3 *Rue de la Madeleine, Paris*—Inventor and Manufacturer.

Gold-reviving fluid for renovating gilding, lace-work, stuffs, and silks, gold and silver embroidery, military uniforms, &c. Patented.

1453 Rosset & Normand, 48 *Rue Vivienne, Paris*—Manufacturers.

French long and square cashmeres. Black chantilly lace, and Alençon point lace.

1455 Rouget de Lisle, Thomas Amedée, 25 *Rue des Tracy, Paris, and* 167 *Regent Street, London*—Inventor.

New apparatus for the composition of designs for fabrics, with a sliding lamp and two reflectors for the purpose of enlarging and reducing the scale of designs.

1456 Rouget, Son, & Co., *Chatenay, near Nantes (Loire-Inférieure)*—Curriers.

Two thick hides, and two shoulder-belts.

1457 Rousseau Brothers, 9 *Rue de l'Ecole de Médicine, Paris*—Sugar Boilers.

Sugar-loaves, unrefined. Patented in England.

1458 Roussel & Dazin, *Roubaix (Nord)*—Manufacturers.

Woollen satin stuffs for dresses.

1459 Rousselot & Baronnet, *Betheniville (Marne)*—Manufacturers.

Unbleached and dyed merino fabrics.

1460 Rouvenat, Léon, 62 *Rue Hauteville, Paris*—Jeweller.

Ornaments, bracelets, head-dresses, swords, and other articles of jewellery, gold, and diamonds, including a sword of honour for the British navy, in solid silver, chased and platined.

Models, in gilt bronze, of crowns, sceptres, swords, and sabres, executed in massive gold and mounted in diamonds, for several foreign powers.

Five different specimens of articles in gold and enamel, one of which is ornamented with diamonds, and adapted for a dress; it can be taken to pieces and used as a brooch, a bracelet, hair-pins, and ear-rings.

1461 Royer, Joseph Charles Anatole, 55 *Quai de la Tournelle*—Manufacturer.

Specimens of gelatine leaves of all colours.

1462 Royer, Pierre Eustache, 6 *Rue de Caire, Paris*—Manufacturer.

Specimens of artificial foliage.

1463 **Ruaud, Jn. Bte.**, *Limoges* (*Haute-Vienne*)—Manufacturer.

Wrought specimens of earthenware, and porcelain, as statuettes, vases, &c.

1464 **Ruas & Co.**, *St. André de Valborgne* (*Gard*)—Spinners.

Specimens of white and yellow raw silk.

1465 **Rudolphi, —**, 3 *Rue Tronchet, Paris*—Manufacturer.

Silver work-table, embossed and chased. Enamelled casket, style 13th century. Plate, chased silver: subject, Mount Parnassus. The same, embossed silver: subject, the Triumph of Amphitrite. Siver chased casket: Bacchanalian on a tiger. Enamelled chased silver casket, "Children Fighting." Lapis lazuli watch casket: subject, Massacre of the Innocents. A casket, in Florence mosaic, "Group of Dogs," the bodies of pearls. Reliquary in filigree: subject, "Charity." Chased casket, vine leaves. A goblet, Oriental agate, style 13th century. Lapis lazuli goblet in the style of the 15th century, fruit enamelled upon gold. Agate goblet, leaves of the maize, fine pearls, "Negroes and Serpent" Goblet in niello, and various others. Silver enamelled vase: subject, Group of Women and Turk. Two small enamelled vases, fine pearls: little figures of Cupids. Two silver gilt candlesticks, "Group of Children," fine pearls. Enamelled silver perfume-burner: "Little Children." Enamelled silver paper-holder, Venus and Cupid. Paper-holder: Duellists of the epoch of Louis XIII., bodies in pearls. Chased silver paper-holder: "St. George and the Dragon," set in rubies, pearls, emeralds, lapis lazuli, &c. Paper-holder inkstand, silver-gilt with gold, enamelled, fine pearls, &c. Chased silver bottles, Oriental form. Turkish pipe, chased silver: group, "Women and Sultan." Meerschaum pipe. Hand looking glass, chased silver, mythological subjects. Egg-cups, silver gilt, with gold. Jewellery: an assortment of bracelets, brooches, pins, chatelaines, necklaces, &c.

1466 **Ruolz, —**, 53 *Rue de Vernueil, Paris*—Inventor and Producer. (Agent, Mr. J. Hart, 62 *King William Street, City*.)

Paints and waterproof varnishes, &c. These products, which are manufactured from the waste of the zinc foundry of La Vieille Montagne, at Liege, in Belgium, are prepared by a new process. They are then ground and mixed with linseed and poppy oils, combined with a certain quantity of turpentine and drying oil. The peculiar property of the waterproof paint is said to consist in its more effectually preserving the wood and iron on which it is applied than any other known paint or varnish, and in effectually preventing damp walls; suitable for railway waggons, iron work, &c.

Employed as plaster coating, and in thicker consistence, these paints protect damp and mouldy walls of every description, and prevent the effects of their humidity from penetrating through to their exterior faces. For the purposes of painting, they are used with great facility, by means of the ordinary painter's brush. As materials for plaster coating they should be applied in thin layers, with a flexible steel trowel. The preparation of the surface is effected by simply scraping over the damaged places, and by drying with a chafing-dish the moistened portions, in order to facilitate their adhesion.

This discovery is of importance for the preservation of shipping, wood and iron work, of naval and other construction, of waggons, railroads, iron, furnaces, &c., as well as for rendering houses more healthy.

1467 **Sabatier, Henri**, 65 *Palais National, Paris*—Producer.

Daguerreotype portraits.

1468 **Saget, Widow**, 17 *Rue St. Elisabeth, Paris*—Producer.

A sidereal light-house, with its fastening pulley. A lantern, with four regular reflectors. Various patterns of lanterns for locomotives, for signals, and hydraulic cranes. Sidereal lamp. Lighting apparatus for propagating light by means of parabolical reflectors; by this system a lamp with a burner of about an inch diameter is equal to 100 wax lights.

1469 **Sallandrouze de Lamornaix**, 23 *Boulevard Poissonnière, Paris*—Manufacturer (formerly Royal Manufactory of Carpets at Aubusson). *Depôt*, 12 *George Street, Hanover Sq., London.*

Velvet carpets; close-shaved carpets and tapestry; spun combed woollen yarn (at Filletin); carded woollen yarn, and carpet woven (at Morissart).

1470 **Sambue, Paul**, *Vaison* (*Vaucluse*)—Silk-spinner.

Specimens of white and yellow raw silk.

1471 **Sarran, Hte., & Dufour**, *Sauve* (*Gard*)—Manufacturers.

Pitchforks, and hames for horse-collars.

1472 **Sauvage, R., & Co.**, 5 *Rue St. Polycarpe* (*Lyon*)—Manufacturer.

Specimens of silks. Stuffs of different shades, mohair, taffetas, &c.

1473 **Sautret & Son**, *Bétheniville* (*Marne*)—Manufacturers.

Unbleached and coloured merino fabrics.

1474 **Sautreuil, —, jun.**, *Fécamp* (*Seine-Inférieure*)—Manufacturer.

A machine to plane wood, and to make mouldings in wrought and cast iron, brass, and steel, put in motion by steam.

1475 **Schmerber, Jean**, *Tagolsheim, near Altkirch* (*Haut-Rhin*)—Inventor and Manufacturer.

A vertical hammer, moved by a cam. By means of a spring, of vulcanized caoutchouc, placed in the body of the hammer, the latter is gradually put in motion during the time of the compression and extension of the spring. The result of this improvement is ease in working the different parts of the machine, and considerable economy of the moving power. The hammer thrown by the cam is sent back by a second spring of caoutchouc placed in the upper part of the apparatus. The machine is put in motion by pulleys, and the variation of the number and the intensity of the strokes is easily obtained by extending the driving band more or less over the pulley. These vertical hammers may be substituted for the hammers with handles, from the smallest size up to those weighing ten hundred weight. They may be made to move with a velocity of 800 strokes in a minute.

The experience of three years in the use of four hammers in the manufactory under the direction of the exhibitor, and in the construction of 19 different vertical hammers, for various purposes, has enabled him to improve and to simplify the new hammers, and to render them superior to those formerly used.

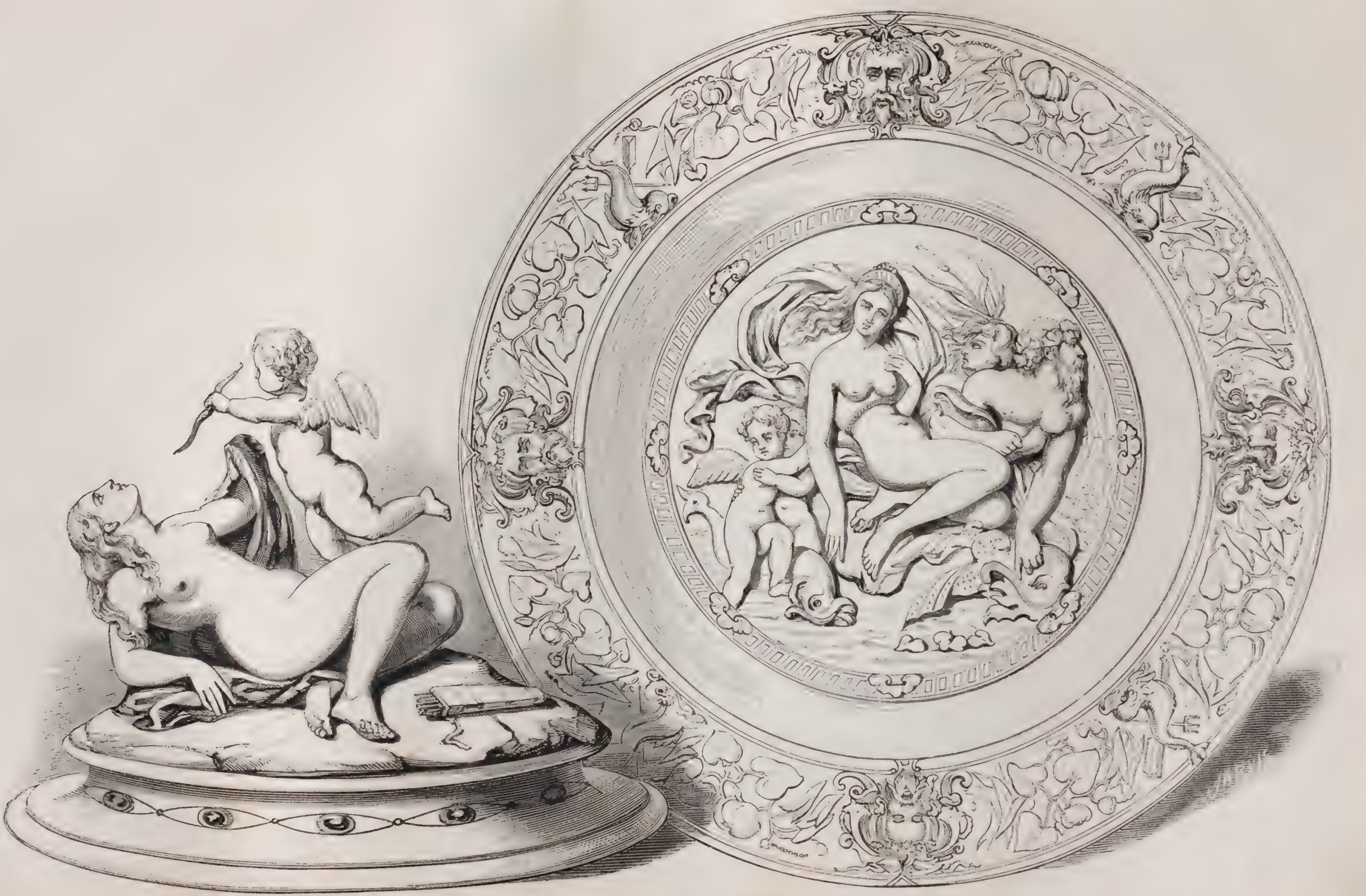
1475a **Schneider & Co.**, *Paris*—Producers.

Designs for machinery.

1476 **Savard, —**, 22 *Rue St. Gilles, Paris*—Jeweller.

Lockets, chains, brooches, bracelets, &c., in lined gold; snuff-boxes, gorgets; complete set of ornaments.

[Lined gold is merely gold lined with copper. The manufacture of this article has increased greatly of late years. It consists of a standard gold leaf affixed to a leaf of some other metal, either by means of pressure, when hot, or by a chemical process.]



LETTER WEIGHT, AND A ROSE-WATER DISH, BY WAGNER. M. RUDOLPH. FRANCE.

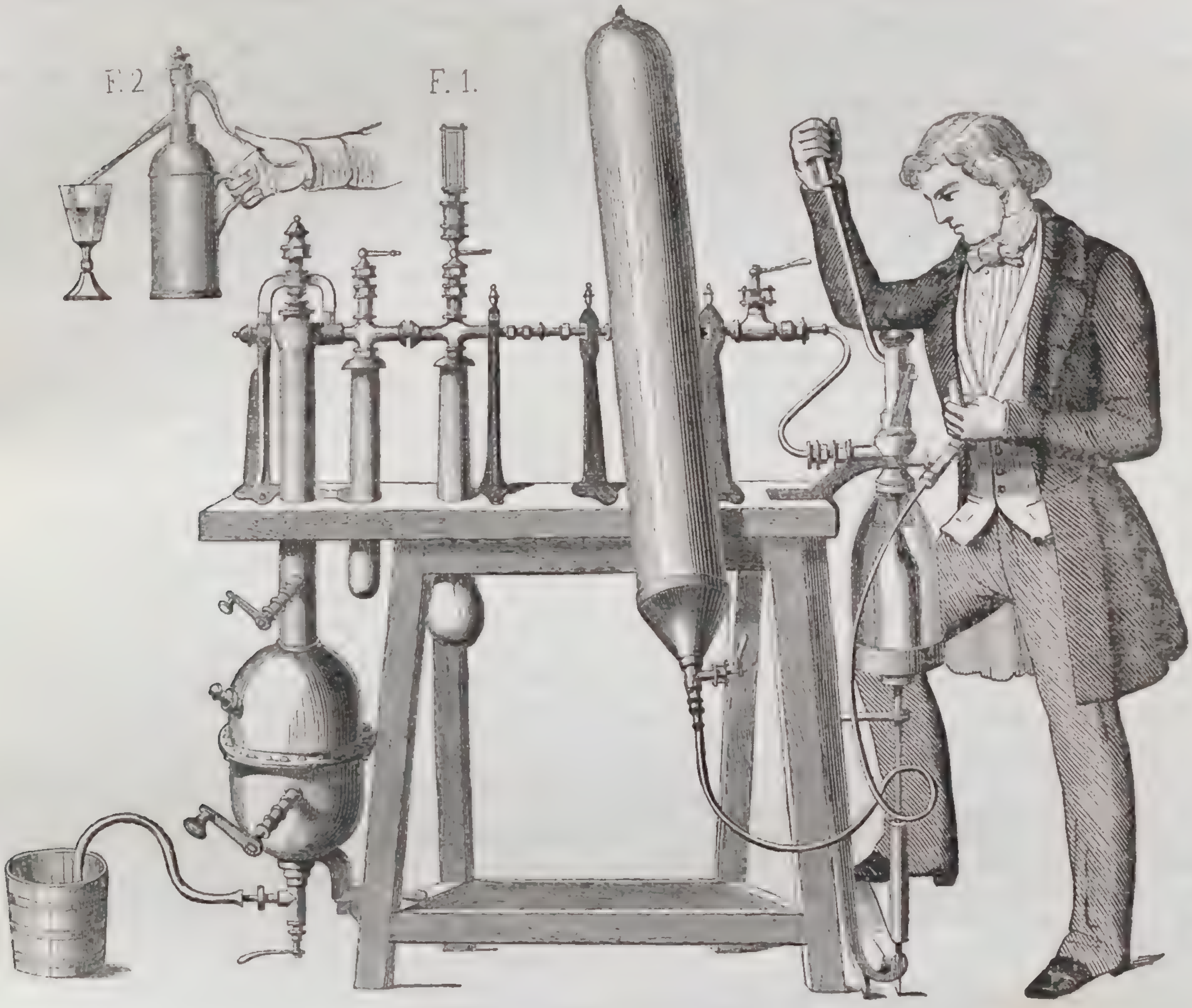
1477 Savaresse, Philibert, 62 *Rue des Marais, Paris*—Inventor and Manufacturer.

Apparatus for the manufacture and employment of aerated liquids.

One of these apparatus, Fig. 1, which is capable of manufacturing from 300 to 3,000 bottles of gaseous water per day according to the dimensions of which it may be constructed, is exhibited as a new invention for rendering all wines effervescent, whatever may be their age, as well as lemonades and other like beverages. It has the advantage of requiring very little manual labour, and only one person to superintend its working.

The other apparatus, Fig. 2, consists of a vase called a *siphoid*, which is used to receive and to give out the gaseous waters as required. It possesses the property of keeping the liquids into which it enters in such a condition that, notwithstanding the frequency with which they may be drawn, none of the gaseous principles escape; so that the last glass is not found to differ in briskness or flavour from the first.

This apparatus is represented in the annexed cut.



Savaresse's Apparatus for Aerated Waters.

1478 Savaresse, Jn. Fs., jun., 223 *Rue St. Martin, Paris*—Manufacturer.

Specimens of strings for violin, bass-viol, &c. Artificial flowers.

1479 Scamps, Ph., *Roubaix* (*Nord*)—Manufacturer.

Twilled pure cotton fabrics.

1480 Schloss, Widow, & Brother, 14 *Rue Chapon, Paris*—Manufacturers.

Portfolios, cash-boxes, porte monnaies, cigar-cases, cigar-holders, and steels. Patented in England. Baskets, knapsacks, and trusses.

1481 Schlumberger, jun., *Thann* (*Haut-Rhin*)—Cotton Printers.

Printed cottons, and woollen and cotton prints.

1482 Scholtus, —, 1 *Rue Blue, Paris*—Manufacturer.

Two upright pianofortes.

These instruments are adapted for use in hot or damp climates. Iron cramps clamp the whole compass of the peg-board, traverse the under board on which the chords are hooked, also of iron, and are fastened at pleasure, by means of a screw-nut and key. This prevents the boards giving way, however tightly the chords may be drawn. Besides these cramps, there are one or two iron bars, of a peculiar form, fixed before the sound-board, half over, half under the chords, without obstructing the mechanism. Above, they press on the peg-board to prevent its giving way; below, they fix the iron-board to which the cords are attached. With such a construction, the separation of the parts is impossible.

1483 De Serionne, Loin, & Co., 32 *Belleville, near Paris*—Manufacturers.

Porcelain knobs, white and coloured. Patented in England.

1484 De Serlay, C. G., *Gueurs* (*Seine-Inférieure*)—Manufacturer.

Specimens of paper.

1485 Serret, Hamoir, Duquesne, & Co., *Valenciennes* (*Nord*)—Manufacturers.

Specimens of the principal products of beet-root.

The exhibitors, by means of a process for which they have obtained a patent, manufacture these products in the purest state. The beet-root being dried and prepared, the best sugars are made from it uninterruptedly throughout the entire year. Of the samples which will be found most to merit attention, are Nos. 12 and 13 in the series; the former contains alcohol in a degree of purity, not found in the commercial article; the second contains a small quantity of potash, of an ascertained strength and purity, superior to those of the finest potash of America. The quality of No. 3 is recognized as being equally fine. But chemical analysis alone could give an adequate expression of the superior properties embodied in these sugars.

1486 FEYEUX, —, 10 *Rue Taranne, Paris*—Manufacturer.

Samples of preserved food, in flasks and packets.

1487 SIGAULT, —, 23 *and* 25 *Rue de la Vieille Monnaie, Paris*—Manufacturer.

Rheims biscuits, dried pastry, and gingerbread.

1489 SIMON & HENRY, 179 *Rue St. Honoré, Paris*—Manufacturers.

Bows for violins and violoncellos, in tortoiseshell or ebony, bordered with gold and silver.

1490 SOUBEYRAND, LS., *St. Jean du Gard*—Manufacturer.

Specimens of silk cords, and raw and wrought silk.

1491 SOUCHON, JN. M., 111 *Rue Montmartre, Paris*—Chemist.

Specimen of Prussian blue, invented by the exhibitor.

1492 SOULÈS, Mme. HYPPOLITE, 21 *Rue de la Michodière, Paris*—Manufacturer.

Two corsets, in white watered silk, and in white satin.

1493 SOURD, AUGUSTE, *Tenay l'Ain*—Wool-spinner.

Specimens of washed, combed, and reeled wool.

1494 STOLTZ, GEORGE, 10 *Rue de Boulogne, Paris*—Machine-maker.

Model of an hydraulic apparatus. Watering and other pumps. Models of oscillating steam-engines. Riveting and percussion machines for nails, &c., on a new system. Exhibited for superiority of execution.

1495 ST. UBERY, *Tarbes* (*Hautes-Pyrénées*)—Producer.

Eighty-four specimens of indigenous woods, prepared for cabinet work.

1496 TABOURDEAU, PIERRE, *Moulins* (*Allier*)—Cutler.

Knives with several blades. Carving-knife with haft in roebuck feet, ornamented with gilt silver. A complete flower-stand, &c.

1497 TACHY, ALEXANDER, & Co., 24 *Rue Dauphine, Paris*—Manufacturers.

Needles for the blind.

1498 TERRASSON DE MONTLEAU, J. A., *St. Estèphe* (*Charente*)—Producer.

Wool in fleeces.

1499 THÉRET, JOSEPH, 38 *Rue des Saints Pères, Paris*—Manufacturer.

Articles of furniture: mantel-pieces, clocks, pictures, &c. Incrusted and mosaic hard-stone relievos.

1500 THEVENET, RAFFIN, & ROUX, 30 *Rue Romarin, Lyon* (*Rhône*)—Manufacturers.

Silk shawl. China crape. Watered Pekin, figured.

1501 THIBAUD-DALLET, EMILE, *Clermont Ferrand* (*Puy de Dôme*)—Manufacturer.

Examples of church windows in different styles.

1502 THIBAULT BOILESVE, HENRI, *Cinq Mars la Pile* (*Indre and Loire*)—Manufacturer.

Samples of mill-stones, floor-tiles, pannels, and drain-tiles.

1503 THIBERT, jun., 31 *Rue Michel le Compte, Paris*—Manufacturer.

Specimens of opera glasses.

1503A TARRIDE, SON, & Co., *Toulouse* (*Haute-Garonne*)—Manufacturers.

Specimens of marbles used for the tomb of the Emperor Napoleon.

1504 TRIPET, —, *Paris*—Producer.

Collection of tulips.

1504A TURGAN, Madame, 28 *Rue d'Enfer, Paris*—Producer.

Specimen of painting on porcelain.

1505 THIER, —, 39 *Passage Choiseul, Paris*—Engineer and Machine Maker.

Surgical and medical instruments. Suckling bottles. Artificial nipples.—Patented in England.

1506 THIERRY, MIEG, *Mulhouse* (*Haut-Rhin*)—Manufacturer.

Various kinds of printed Cashmeres.

1508 TOUAILLON, CHARLES, 12 *Rue Coquillière, Paris*—Inventor and Engineer.

Specimens of mill-stones. Machine for dressing mill-stones, invented by the exhibitor; millstone beds; silk sieves; mill machinery.

1509 TOURNEUR, —, 39 *Rue Richelieu, Paris*—Manufacturer.

Specimens of roasted Bourbon, Mocha, and Martinico coffee.

1510 TRIEBERT, FREDERIC, 132 *Rue Montmartre, Paris*—Musical Instrument Maker.

Musical instruments: horns, flutes, hautboys, English horns; clarionet mouth-pieces with moveable sound board; newly invented reeds, for various instruments.

1511 TROCCON, ACHILLE, 14 *Rue des Capucins, Lyons* (*Rhône*)—Manufacturer.

Shawls and cravats, of various silk stuffs.

1512 TRONCHON, NAPOLÉON, 9 *Avenue St. Cloud, Paris*—Manufacturer.

Iron articles of furniture for apartments and garden ornaments. Iron trellis-work, made by machinery. Conservatories, poultry-pens, gardening frames, dog-kennels, pheasant walks and aviaries. Light constructions for parks and gardens, such as summer-houses, bowers, &c. Tables, chairs, benches, fruit-baskets, flower-stands, artificial trees for climbing plants, cattle-enclosures, moveable folds, &c.

1513 TROUVÉ, A., 5 *Passage Violet, Paris*—Sculptor.

Frames decorated with ornaments in paste. Various objects and moulds of ornaments, in sulphur.

1514 VALANSOT, —, *Lyon* (*Rhône*), *and* 4 *Rue Puits Gaillot, Paris*—Manufacturers.

Specimens of plain silks. Gros de Naples, curled, plushes, and taffety.

1515 **Valant, Pierre Telemaque**, 23 *Rue de Seine, Paris*—Stationer.

Fancy stationery: ornamented letter-paper. Ornamented letter-paper, with illustrations. Improved envelopes, cut by machinery. Easy method of learning flower painting and every style of drawing without a master.

1516 **Van Balthoven, Pierre**, 28 *Faubourg St. Antoine, Paris*—Manufacturer.

A cupboard, with mirrors. Bedsteads. Chest of drawers, in rose-wood, with marbles.

1517 **Vantillard & Co.**, *Merovel, near L'Aigle* (*Orne*). (Agents, **L'Habitant & Guynet**, 9 *Rue du Sentier, Paris*—Manufacturers.)

White iron pins, manufactured by a patent process. These pins are stronger, more brilliant, and have their points sharper than those made with brass wire. Exhibited for cheapness and durability.

1519 **Verdet & Co.**, *Avignon, Vaucluse*—Producer.

Samples of wrought silk and organzine.

1520 **Vezon Brothers**, *Ligugé, Poitiers, Vienne*—Producer.

Granulated gluten of different kinds.

1521 **Viard, Louis**, 34 *Rue St. Martin, Paris, and* 45 *Wellington Square, Clerkenwell*—Manufacturer.

Various samples of colours and varnish, including a varnish to impart colour without rubbing, which dries in two hours, adapted for staircases, ship-cabins, wooden floors, &c., as well as all architectural ornaments.

1522 **Villeroi, —**, C.E., 3 *Rue Pavée St. André, Paris*—Musical Instrument-maker.

New instrument of music, under the name of harmonine.

[The harmonine, an instrument of recent invention, is the only one amongst wind instruments, upon which a musician may produce various species of chords; and with the same powerful effect as may be produced by the keys of the harpsichord or piano-forte. It admits of various degrees of intonation, and gives free scope to the delicate touches produced by the movements of the tongue. It is likewise capable of producing the binforzando, and the smorzando passages. Its compass or extent comprises a chromatic scale of thirty-six notes, viz., from the bass C in the flute, to the fourth octave, or C above.

The sounds, which it emits with peculiar sweetness, are rather melancholy, and at the same time bear a strong resemblance both to the hautboy and the bag-pipe, as well as to the violin.

The mouth-piece of the harmonine, although in a direction opposite to that of other wind instruments, is of easy management, and it requires but little practice to obtain a certain degree of proficiency; even on a first trial, the least skilful musician may produce a melody of sound throughout the whole compass of the instrument. The fingering is simple and natural, especially for those who may have acquired a moderate proficiency on any other instrument.

The form of the harmonine, although singular is not inelegant, and being of smaller dimensions than the flute, is equally portable. The harmonine being a complete instrument, may be used as an accompaniment, either in the orchestra or drawing-room.]

1523 **Vilpelle, Jules**, *Montereau-sur-Yonne* (*Seine and Marne*)—Manufacturer.

Sculptured steel dagger, of one single piece.

1524 **Vignat Brothers**, *St. Etienne* (*Loire*), 3 *Place des Victoires, Paris*—Manufacturers.

Specimens of silk ribbons printed, figured and plain, of all kinds. Specimen of Chiné silk.

1525 **Vincent, Hippolyte**, 14 *Rue Neuve St. François* (*Marais*), *and* 40 *Wigmore Street, Cavendish Square*—Inventor and Manufacturer.

Specimens of gelatine casts invented by the exhibitor.

Specimens of the application of the galvano-plastic art to the gelatine casts, by a new process of electro-metallurgy.

[By means of gelatine reduced to a liquid state, elastic moulds can be taken capable of reproducing, with great accuracy, and in a single piece, casts of elaborately-sculptured objects of remarkable finish and delicacy.

The process of casting consists in dissolving a certain quantity of gelatine in hot water until it is reduced to the state of liquid paste, when it is run over the object intended to be reproduced. As it cools, the gelatine assumes a consistency offering a considerable degree of resistance, and highly elastic, which latter quality enables it to be easily detached from the embossed work on which it has been fitted, although the complicated details of the subject and its cavities, might seem to render this process almost impossible. In the hollow formed by the gelatine a kind of plaster, prepared for the purpose, is next run; and when the plaster has acquired the requisite degree of hardness, the gelatine mould is detached in the same manner as from the original: and from this apparently fragile mould as many as six copies may be taken, all reproducing the original with great fidelity.

Many difficulties had to be overcome before this result could be obtained. The chief of these consisted in preventing the two plastic substances, each impregnated with a certain quantity of water, from becoming welded together, or retaining on their surfaces (thus put into juxtaposition) traces of the deposits of plaster or gelatine, which was constantly the case in the first experiments.

By the ordinary method of taking casts (namely, in plaster moulds, composed of several pieces), the work of the sculptor or engraver is frequently disfigured by the imperfection of the mould itself, and by the unskilful method employed to obliterate the marks of the seams, which impair the finish of the work. The new process retains the touches of the original, which the usual mode of casting generally destroys, especially when the model happens to be in wax or any other delicate material.

In the imitations produced by gelatine, even the material of the original may be recognized by the minute reproduction of the design, the veins, the lineaments, the irregularities of the surface, &c.

In the reproduction of anatomical specimens, muscle, artery, vesicle, membrane, &c., stand out in strong relief.

This application has already been highly serviceable to the arts of the sculptor, the chaser, the engraver, and the electro-typist; and to the sciences of anatomy, numismatics, natural history, &c.

Gelatine casts are now taken by a number of operatives, who have imitated this process, both in France and abroad. In Great Britain it forms an extensive branch of trade.]

1526 Vincent, Jules, *Valleraugue* (*Gard*)—Silk Spinners.

Specimens of white and yellow raw silk.

1527 Vincent, J., 9 *Quai des Tanneurs, Nantes* (*Loire-Inférieure*)—Manufacturer.

Boot legs, and upper leathers for boots.

1528 Violette, Jules H. M., *St. Omer* (*Pas-de-Calais*)—Manufacturer.

Ship biscuits baked by immersing the dough in high-pressure steam; plaster, baked by the same process, of a pure white colour, adapted for mouldings and statuary. Red wood charcoal, for the manufacture of gunpowder, prepared by the same method; this article has been adopted by some of the most extensive powder manufacturers in France, as it effects a saving of 40 per cent. Mercury distilled by immersion in overheated steam, by placing it in a vessel through which a current of vapour 350° centigrade is made to pass; the mercury converted into vapour, is carried off with the steam, and condensed with it in an outer vessel. This new manner of working mercury not only effects a considerable saving in the waste of the metal, but likewise obviates the dangerous consequences of the old methods on the health of the workman.

1529 Vivier & Co., 1 *Rue Croix Paquet, Lyons* (*Rhône*)—Manufacturers.

Moiré (watered) stuffs, velvets, &c., and novelties of all descriptions for waistcoats.

1530 Vittoz, —, 10 *Rue des Filles du Calvaire, Paris*—Manufacturer.

Artistic bronzes. Chimney ornaments. Clocks. Chandeliers. Vases. Cups and lustres. Statuettes and groups. Several of these groups are by Coustou, Clodion, Oudou, Pradier, Feuche, Pascal, Combervatt, Combett, Claymmans, &c., and of elaborate workmanship.

One of these vases is represented in the Plate 250. A group of objects is also shown in the accompanying Plate.

1531 Voizot, E., 32 *Rue Bourg l'Abbé, Passage de l'Ancre, Paris*—Manufacturer.

Polished steel and imitation stones for jewellery.

1532 Volkert, —, 99 *Rue du Faubourg St. Antoine, Paris*—Cabinet Maker.

Specimens of veneering, on inlaid pannels.

1533 Voruz, J. S., sen., *Nantes* (*Loire-Inférieure*)—Manufacturer.

Railway carriage cushion.

1535 Zadig, J. B., 28 *Rue du Sentier, Paris*—Manufacturer.

Specimens of gauzes, barèges, shawls, and scarfs. Fancy silks.

1536 Zuber & Co., *Rixheim* (*Haut-Rhin*)—Manufacturers.

Specimens of white paper, paints, and artificial ultramarine.

1537 The Agricultural Society at Lyons (*Rhône*)

Specimens of spun silk and cocoons.

1538 Alléon, Henry, *Annonay* (*Ardèche*)—Manufacturer.

Specimens of natural produce; albumen from eggs.

1539 Chatemon Slate Company, *Javron* (*Mayenne*).

Specimens of slates for roofs, paving, and billiard tables.

1540 Andelle, Gustave, *Epinac* (*Saône and Loire*)—Manufacturer.

Various samples of bottles.

1541 Anthelme, Andelin (*Aisne*).

Lump of potash. Specimen of alum, which differs from the common alum, inasmuch as it does not contain any sulphate of ammonia, but only potash, and is obtained with the salts of potash from sea-water by the process invented by M. Balard, Member of the Institute of France.

1542 Arnoux, Claude, 25 *Rue du Mont Parnasse, Paris*—Inventor and Manufacturer.

A model, reduced to the scale of 1 to 5, of the articulated carriages for railroads of any curve, on the improved system adopted on the railway from Paris to Sceaux. This railroad presents, on an extent of 6½ miles, curves from 82 feet to 984 feet in radius. It has been opened since the 26th of June, 1846. During these five years the trains have travelled over 280,000 miles; the number of passengers being 3,000,000. The cost of traction, according to the account for the year 1850, was 2*s.* 2*d.* per mile, and the cost of repairs 1*s.* 11*d.* per mile, making the whole cost per mile 4*s.* 1*d.*, the whole distance being 6½ miles, and one-third of it presenting an inclination of 1 in 90, which increases the expense in a very sensible manner. With the exception of the wheels to which the breaks are applied, none have been changed or renewed since the opening. Those of the goods-train have travelled over 138,000 miles, and are still in good working order. No accident has happened up to this day, 13th August, 1851.

The advantages of this system are,—1. The freedom of the axletrees to work round a pole-bolt, which keeps them constantly in a direction at right angles to the rails; and, 2nd. The freedom of the same axles to play upon their axis, as well as that of the wheels upon the barrels, a circumstance which offers a security against all catching of the wheels, prevents their slipping, and diminishes the resistance, by permitting each wheel to adapt its velocity to the distance to be passed over.

By means of this new arrangement, the revolution takes place in two directions at once, without any obstruction.

1543 Avisseau, Charles (*Indre and Loire*)—Manufacturer.

Specimens of enamelled pottery, a large rustic goblet, &c.

1544 Aubry Brothers, 33 *Rue des Jeûneurs, Paris*—Manufacturers.

Dress, shawl, handkerchief, tippet, lace-lappets, piece of lace, and application lappets.

1545 Audiat, Ferdinand, 22 *Rue du Mail, Paris*—Manufacturer.

Embroidered tulles; imitation of lace and application.

1546 Béringer, Beatus, 6 *Rue du Coq St. Honoré, Paris*—Gunsmith.

Five fowling-pieces of various descriptions.

1547 Bernard, Leopold, *Rue Villejust, Passy* (*Seine*)—Gunsmith.

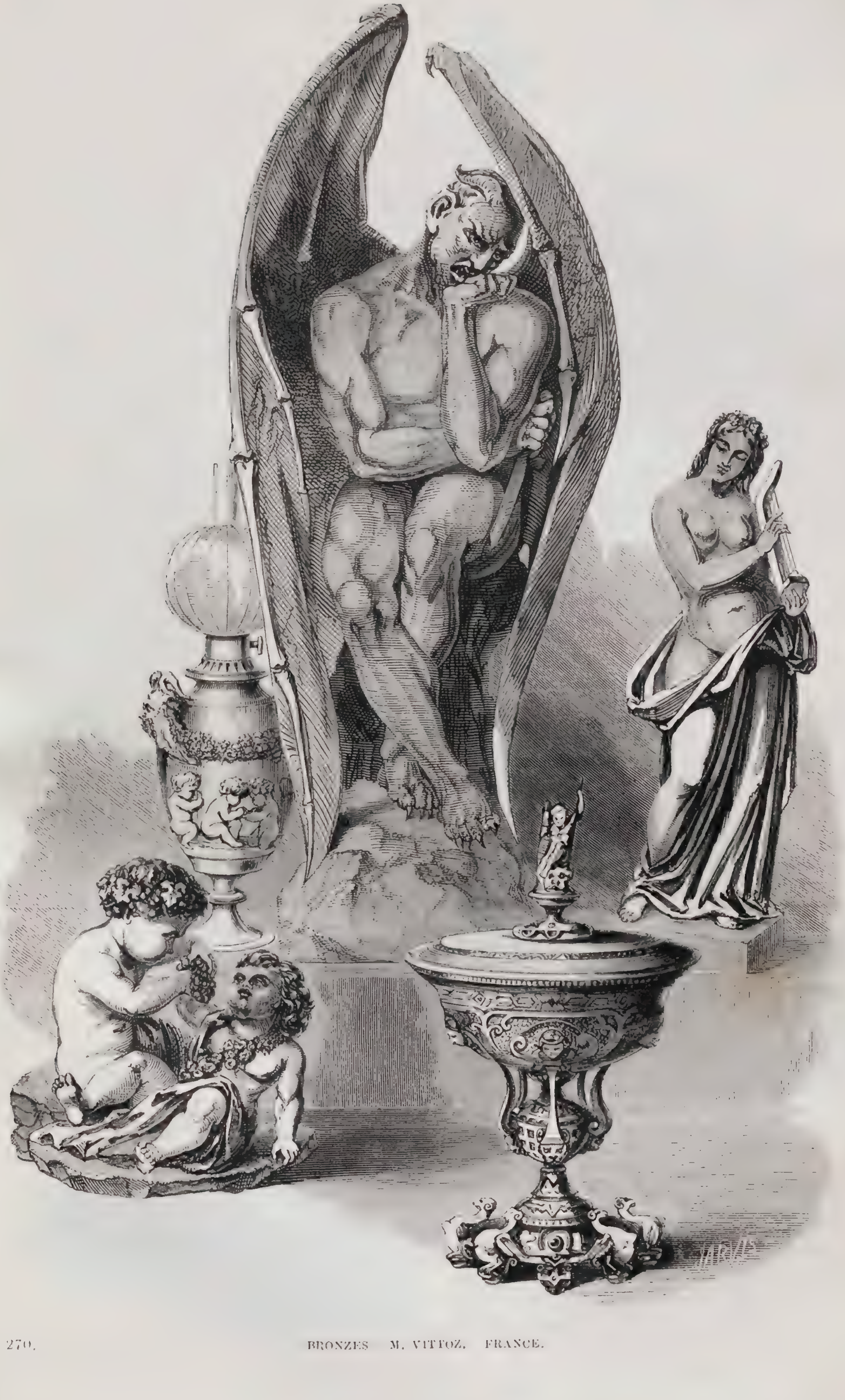
Damascus gun and pistol barrels.

1548 Bernoville, Larsonnier, & Chenest, *Guise, St. Quentin, Puteaux and Mulhouse, and 23 Rue des Jeûneurs, Paris*—Manufacturers.

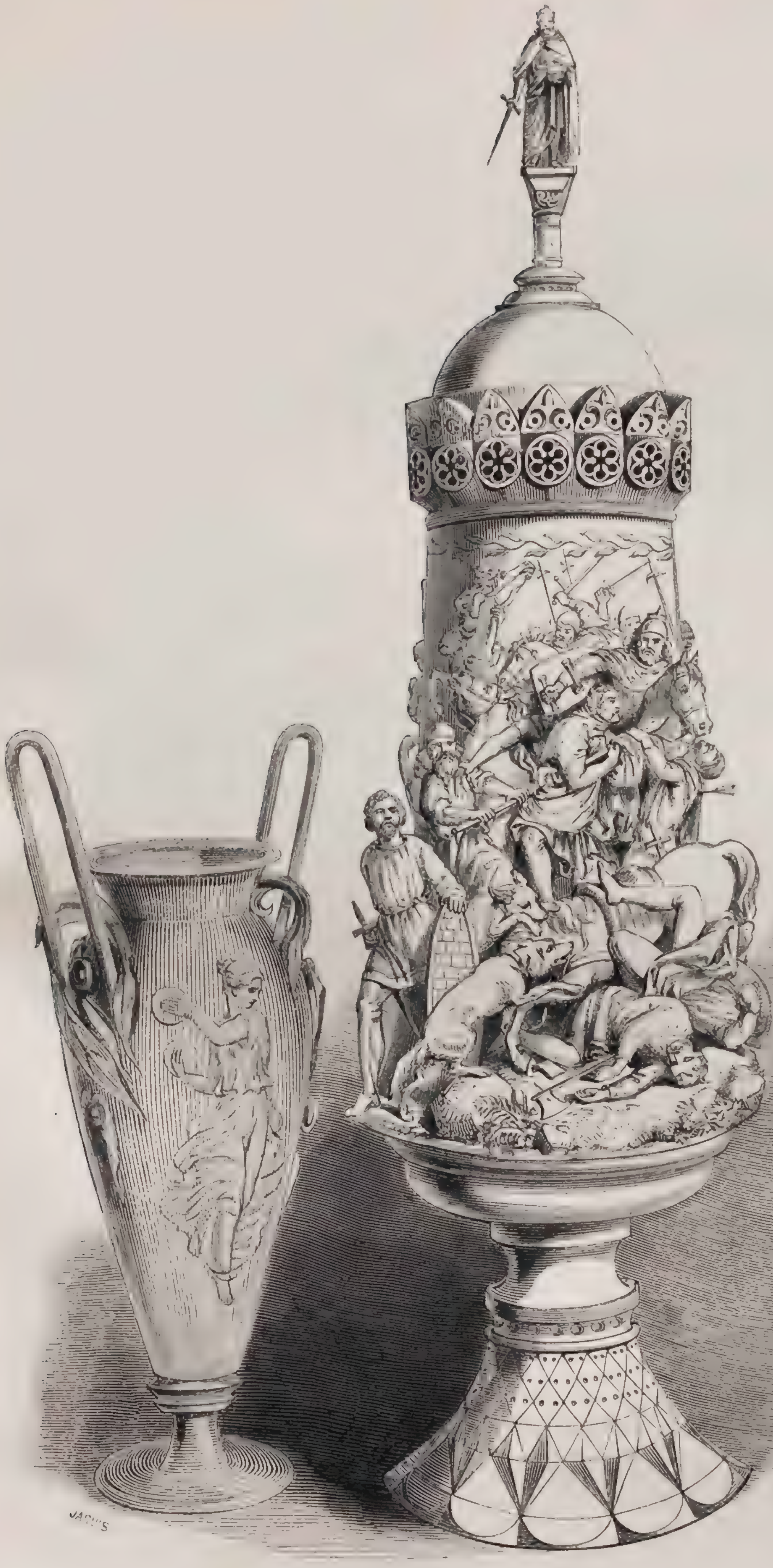
Samples of combed and spun wool.

Unbleached fabrics, prepared for printing and dyeing.

Bleached fabrics prepared for printing, and for shawls



BRONZES M. VITTOZ. FRANCE.



281. BRONZE VASE. M. VITTOZ. FRANCE. CARVED IVORY VASE. M. LAUTZ. FRANCE.

and dresses. Dyed fabrics for dresses. Dyed shawls of various colours.

Novelties for dresses. Printed woollens; and printed light fabrics.

1549 Bertaud, —, jun., 32 *Rue de Bretagne, Paris*—Optician.

Experimental crystals; spath: quartz; and crown prisms. Achromatic object-glasses.

1550 Billiet & Huot, 43 *Rue du Sentier, Paris*—Manufacturers.

Specimens of combed wool and woollen yarn.

1551 Blanquart, Evrard, *Lille* (*Nord*).

A frame containing photographs of various objects.

[The photographs here exhibited are shown as illustrations of a new and rapid process of obtaining proofs from photographic negatives. A considerable time is generally necessary in taking off a print from a negative, in order to give depth and definition to it. In the present instance, the proofs were obtained in one minute at the utmost, by a new process, the particulars of which are not given. By this process, the inventor states, it is possible to obtain three hundred proofs in one day, even in winter. —R. E.]

1552 Blaquière, Jean Marie, 6 *Rue Neuve St. Augustin, Paris*—Manufacturer.

Parisian playing cards; a new kind of playing cards.

1553 Bourgogne, A., 3 *Rue du Hâvre, Paris*—Manufacturer.

Lamps, with moderator and warning chime.

1554 Boyer, Victor Placide (Successor to Feuillet), 22 *Rue de la Paix, Paris*—Manufacturer. (Agents, Lightly & Simon, 123 *Fenchurch Street.*)

Vases: hunting subjects, stag and boar, bronze feet and throat; cruet-shaped, green ground, four medallions of flowers mounted in bronze; two medallions of fruit, and two medallions of flowers; wreaths of foliage, with flowers and fruit on white; climbing flowers on white; imitating the old enamels of Limoges; and decorated with green garlands.

Green cup, two medallions; pair of green vases with lilies, and pair of green candelabra, *en suite*.

Pictures: Raphael at the Vatican, after Horace Vernet; small study of a head, after Delorme, said to be of great value; Landscape and Cattle, after Demarne.

Oval table basket, turquoise ground, with cupids; round table basket, white, with gold fillets. Bouquets.

Plates. A variety of cups and saucers.

Vases: large, purple ground, four medallions, flowers and fruit, mounted in bronze; and single, Watteau subject, with flowers, without bronze.

Candelabra, turquoise ground, and subjects.

Salver, old Sèvres; two female figures, with bronze foot; plates of various designs, as specimens; and cups and saucers, with subjects.

1555 Breton, —, 28 *Rue Jean Jacques Rousseau, Paris*—Manufacturer.

Wooden clarionet, on Boehm's principle; crystal flute; wooden flute on Boehm's principle; common flute.

1556 Tahan, Alexander, 30 *Rue de la Paix, Paris*—Manufacturer.

Dressing-cases made of the finest wood, ornamented with tortoise-shell, mother-of-pearl, silver or gold inlaid; fitted complete with cutlery, brushes, and glass, mounted with silver, engraved, embossed or gilt.

Ladies' work-tables, desks, book-cases, flower-stands, &c., made of tortoise-shell, ebony, tulip-wood, and rosewood; mounted with gilt ornaments, carved or inlaid.

Ladies' jewel-cases, shawls, scents, papeterie, gloves, laces, blotting-paper, ink-stands, &c.

1557 Cail & Co., 46 *Quai de Billy, Paris*—Machine-makers.

A locomotive on Crampton's system, with tender; lathe for turning the wheels of locomotives; mortising machine; sugar-cane mill; wrought iron locomotive wheel of a single piece; various specimens of sheet iron.

The exhibitors employ 2,600 workmen. The principal manufactory is at Paris, but there are branch establishments at Grenelle, Denain, Bruxelles, Amsterdam, and Guadaloupe.

1558 Chailloux, Lepage, & Pochon, *Puiseaux* (*Loiret*)—Producers.

A cask of honey, and a box of saffron.

1559 Chennevière, Theodore, *Elbeuf and Louviers* (*Seine-Inférieure*)—Manufacturer.

New fancy materials for trowsers, gowns, cloaks and linings. Plain twilled pilot, beaver cloths, and impermeable cloths.

1561 Chretin, Maximilian Theodore, *Amiens* (*Somme*)—Manufacturer.

A Mosaic representing a human head.

1562 Christofle & Co., 56 *Rue de Bondy, Paris*—Manufacturers.

Large silvered tea-urn and centre-pieces; gilt and silvered candelabra; jugs and salvers; tea and coffee-pots; cups and saucers; tureens; casseroles; round and oval dishes; dish covers; gilt and silvered candlesticks; wine coolers; gilt and silvered spoons, forks, and knives, and other articles for the table. Daguerreotype-plates.

1563 Clicquot, —, *Courbevoie, near Paris* (*Seine*)—Manufacturer.

Specimens of engravers' tools.

1564 Colin, Joseph Remi, *Epinal* (*Vosges*)—Marble-cutter.

Specimens of polished marbles, granites, and serpentine.

1565 Commercial Chamber of Lyons (Brosset, sen., President).

Specimens of damask, gros de tours, brocatelles, droguets, and various other silks and stuffs.

1566 Couder, Amédée, *Rue Rochechouart, Paris*—Designer.

Designs for stained paper; portières for hangings of tapestry, for printed shawls, and other industrial designs.

1567 Connerot, Michel, 37 *Rue Bourbon Ville-neuve, Paris*—Manufacturer.

Samples of umbrellas and parasols.

1568 Conservatoire des Arts et Metiers (Col. Morin, Director), *Rue St. Martin, Paris*—Producer.

Metrical measures. Flexible, liquid, troy, and long measures of various materials.

[The phrase "Metrical Measures" appears to an ordinary reader to savour of tautology. It is really not so, however, in the present instance; for the expression simply means a set of measures founded on the standard, called the "Metre," which was adopted by the government of France at the epoch of the first revolution. This standard is the ten-millionth part of the quadrant of the terrestrial meridian, and from the measurements and calculations which were made at that period on an arc of the meridian which extended from Barcelona to Dunkirk, it was reckoned to be 39·371 inches of the English standard yard, which contained 36 inches. Thus the French metre, which is longer than the English yard by $3\frac{1}{3}$ inches, or, more accurately, by $3\frac{10}{27}$ inches, is the standard of all the measures and weights of France. Its decimal multiples are successively denoted by the prefixes *deca*, *heca*, *chilio*, &c., which signify 10, 100, 1000, &c., times respectively; and its decimal submultiples or fractions successively by the prefixes *deci*, *centi*, *milli*, &c., which signify $\frac{1}{10}$, $\frac{1}{100}$, $\frac{1}{1000}$, &c., parts respectively. The metre itself was made the unit of lineal measure and itinerary distances. The *decametre* squared, which was called the *arc*, and consequently contains 100 square metres, was made the unit of superficial or land measure; its centesimal multiple, *hectare*, contains 10,000 square metres, and its centesimal submultiple, *centiare*, 1 square metre. The *decimetre* cubed, which was called the *litre*, and therefore contained a thousandth part of the metre cubed, was made the unit of capacity for liquids; its decimal multiple *decalitre* contains 10 cubic decimetres, and its decimal submultiple, *decilitre*, one-tenth part of the cubic decimetre. The litre and its successive multiples, *decalitre*, *hectolitre*, &c., were also made the measures for dry goods, such as corn, &c. The cubic metre itself was made the unit of solid measures, and called the *stere*, its decimal submultiple, the *decistere*, containing a tenth part of the cubic metre. The weight of a cubic *centimetre* of distilled water, at the maximum density, was called the *gramme*, and made the unit of all measures of weight. This unit was found by careful experiments to be equivalent to 15·434 grains of English Troy weight; hence the *kilogramme*, the usual unit for commercial purposes in France, weighs a trifle more than $2\frac{1}{5}$ pounds of English avoirdupois weight. From the decimal relations which subsist among these different weights and measures, it plainly appears that the *kilogramme* is equal to the weight of a *cubic decimetre* of water, or of a *litre* of the same liquid at the maximum density. The capacity of the *litre* is therefore a trifle more than 61 English cubic inches, or about two-ninths of an English gallon diminished by a hundredth part of the two-ninths.]

1569 Coulbois, —, *Avallon* (*Yonne*)—Leather Manufacturer.

Japanned leather, grained calf-skin for boots and shoes, and trimmings.

1570 Courtin, Raoult, 124 *Route d' Oliver*, *Orleans* (*Loiret*)—Manufacturer.

Barrel of vinegar, and various samples.

1571 Courtois, Etienne, 13 *Rue du Faubourg Montmartre*, *Paris*—Manufacturer.

Glazed calf-skins for boots and shoes, and all kinds of leather for saddlers, coach-makers, and harness-makers.

1572 Cousin, —, 30 *Grande Rue Verte*, *Paris.*

Specimens of lithographic drawings on paper.

1573 Cremer, Joseph, 29 *Rue de l'Entrepôt*, *Paris*—Manufacturer.

A large piece of furniture with three doors, containing a writing-table, dressing-table, and pictures in mosaic and chequer work.

1574 Croisat, Jean, 76 *Rue de Richelieu*, *Paris*—Manufacturer.

Specimens of perukes without toupees. A machine for working hair in silk and other fabrics.

1575 Dafrique, Felix, 8 *Rue Jean Jacques Rousseau*, *Paris*—Jeweller.

Specimens of jewellery in gold, such as bracelets, leontines, chains, and cameo-brooches.

1576 Darblay, jun., 16 *Rue des Vieilles Etuves St. Honoré*, *Paris*, *and* 37 *Fenchurch Street*, *London*—Producer.

Two sacks and a barrel of wheaten flour.

1577 Darbo, F., 86 *Passage Choiseul*, *Paris*—Manufacturer.

Spiral suckling bottles; double pumps; artificial nipples; and bidet.

1578 Darnet, D., 83 *Rue Richelieu*, *Paris*—Manufacturer.

Shirts of extra fine linen cloth, with fronts embroidered with fine gold thread, in leaves and flowers. The gold thread will stand the effects of washing, like the linen. Exhibited for workmanship and style.

Shirts of extraordinary fine linen; the fronts similarly embroidered, with designs representing roses, tulips, &c.

Shirts of half Holland, with fronts of different designs, embroidered, full and in small fancy plaits.

Embroidered fronts for shirts, of various designs.

1579 Daubet & Dumaret, *Lyon* (*Rhône*)—Manufacturers.

Various articles of furniture.

1580 Dedier, Charles Paul, *Ucel*, *near Aubenas* (*Ardèche*)—Manufacturer.

Skeins of raw silk, and balls of organzine.

1581 De la Beaume, Charles, 20 *Rue de Courcelles*, *Paris* — Manufacturer. (Agent, M. De Fontaine Moreau, 4 *South Street*, *Finsbury*.)

Stamping and registering machine for railways, post-offices, &c.

Threchometer, to reckon distances, specially adapted for vehicles.

Agricultural implements.

1582 Delacour, L. Felix, 20 *Rue aux Fers*, *Paris*—Manufacturer.

Swords and sabres of various countries. Bronze and cast-iron articles: chandeliers, fire-irons, fenders, &c.

1583 Delamorinière, Gonin, & Michelet, 12 *Quaie de Béthune* (*Ile St. Louis*), *Paris*—Manufacturers.

Satin barège dresses, mouseline-de-laine, Paris crape, &c. Long shawls. Fancy woollen and cotton fabrics.

1584 Delcambre, A., 6 *Rue de Choiseul*, *Paris*—Manufacturer.

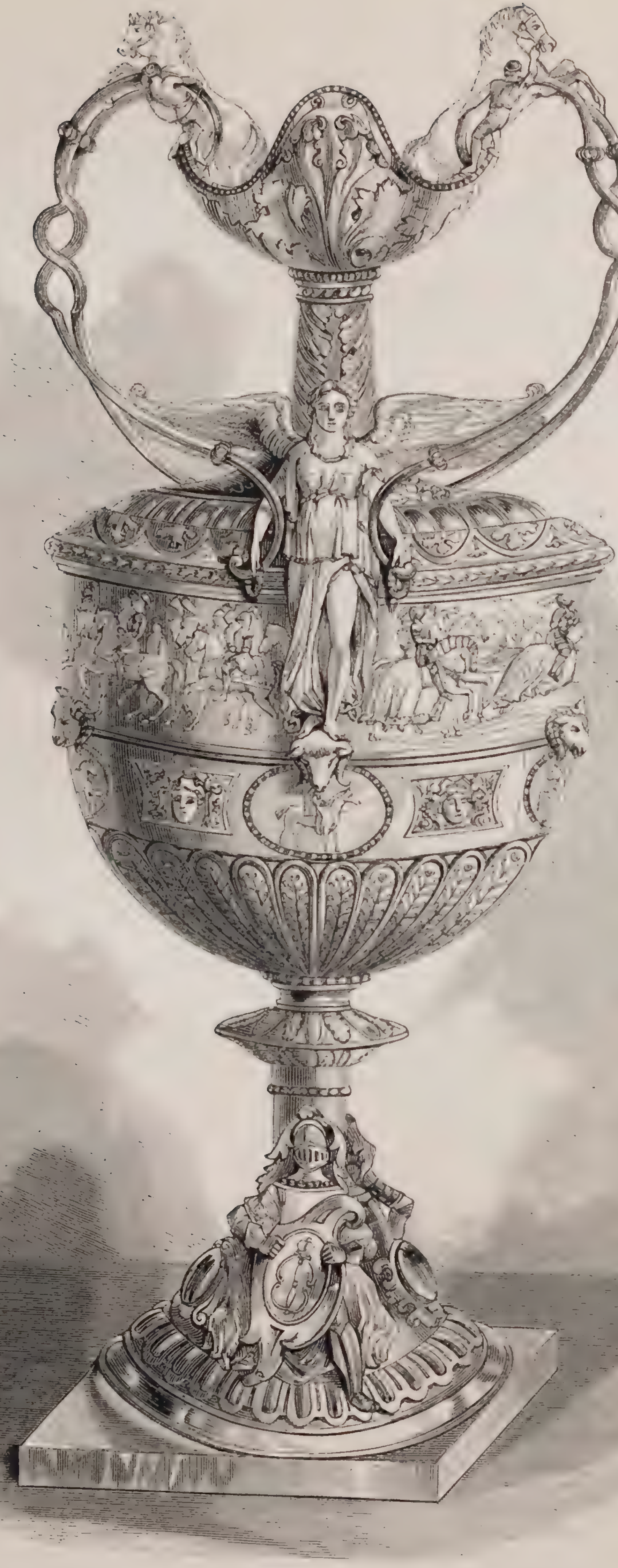
Piece of black silk lace. Black silk lace scarf. Fine gold and natural-coloured silk lace.

1585 Delongueil, Hyppolite, 8 *Rue Nationale St. Honoré*, *Paris*—Coachmaker.

Close calash, vazistas, mounted on springs, pincers' fashion, grey lining, painted blue, with silver plated ornaments.

1586 Depoully, Charles, 7 *Rue du Faubourg Poissonnière*, *Paris*—Manufacturer.

Dresses of various designs and fabrics. Various descriptions of silk handerchiefs.



VASE IN SILVER. M. J. DURAND, FRANCE.

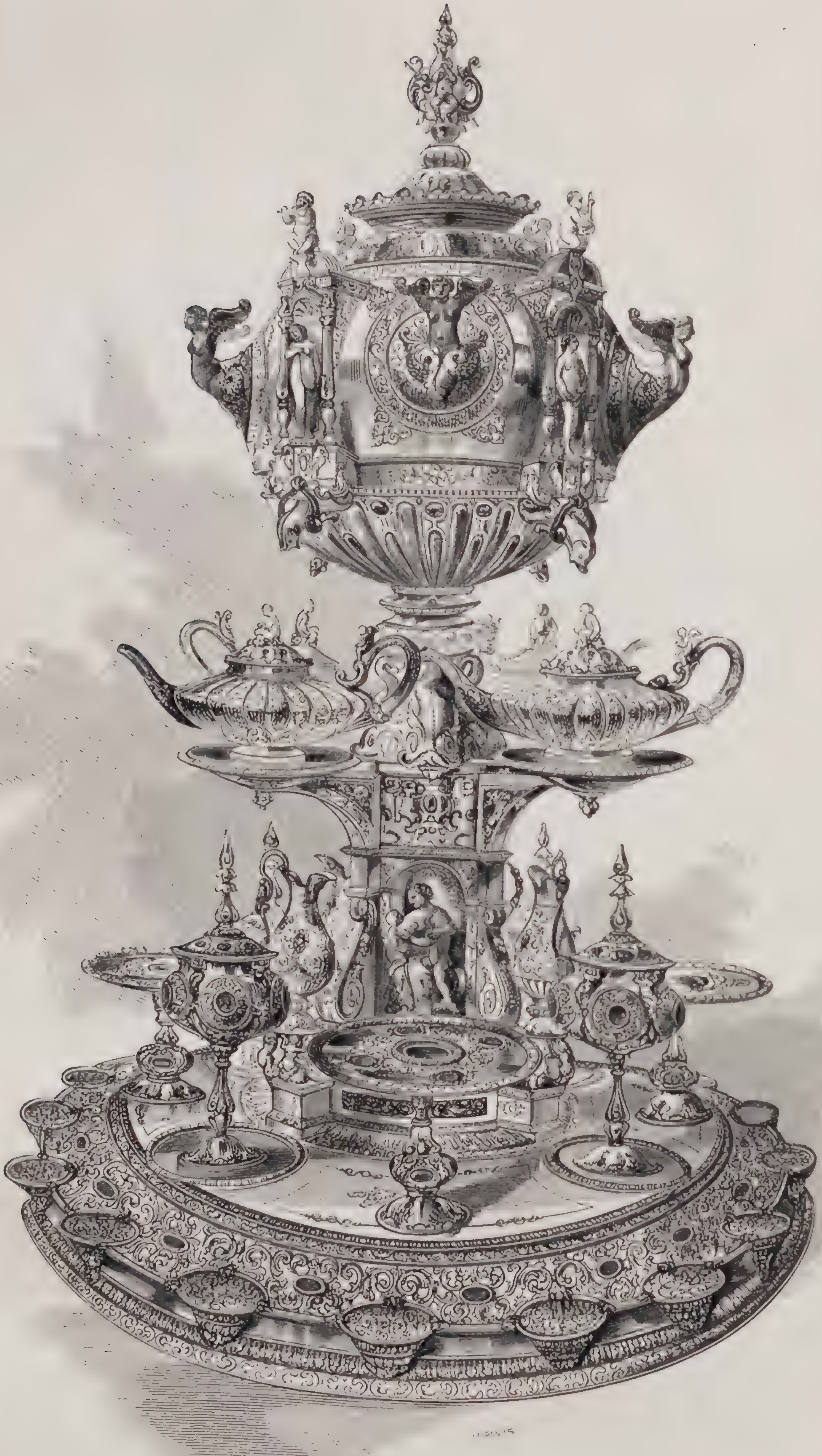
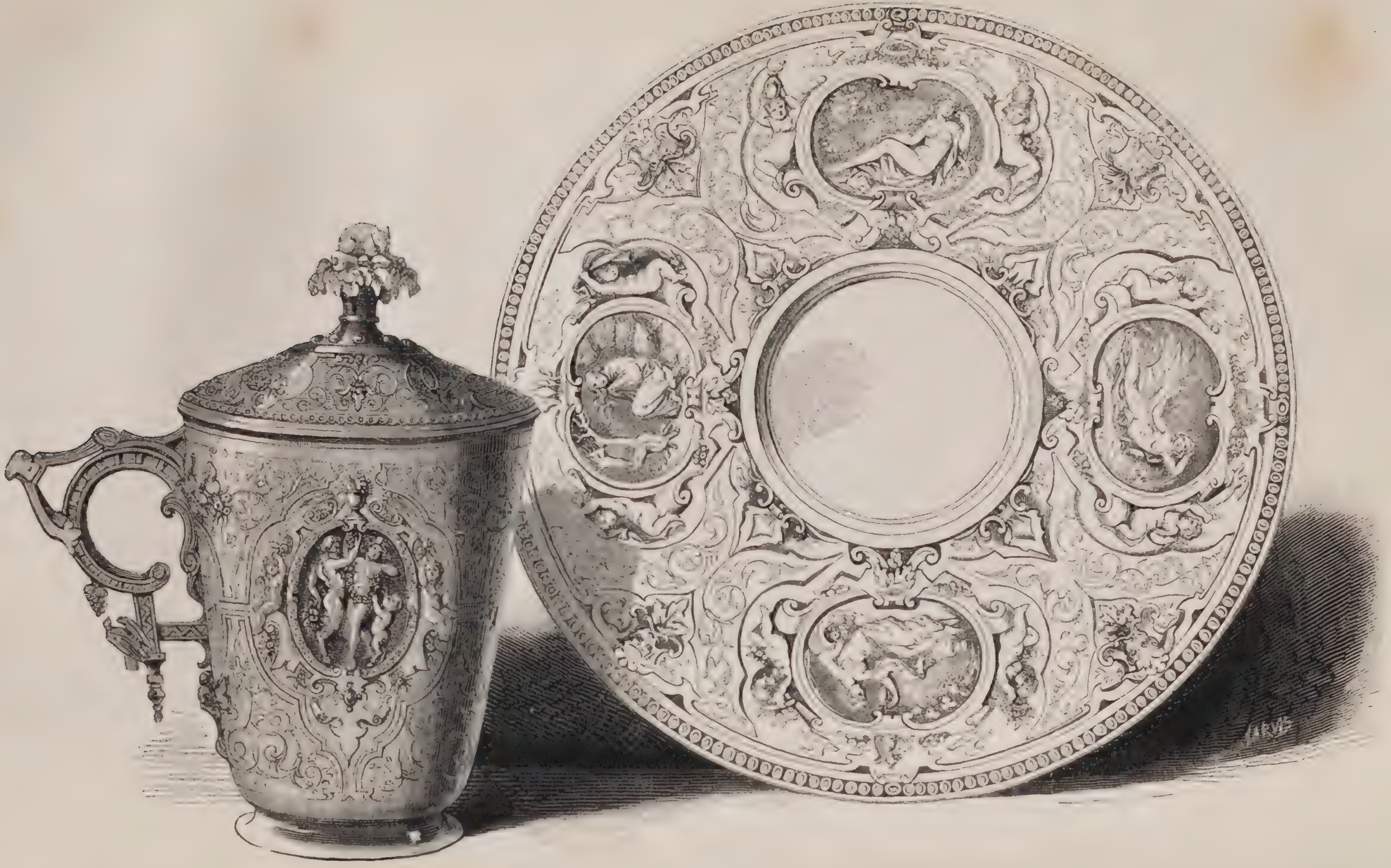


TABLE CENTRE-PIECE. M. DURAND. FRANCE.



CHASED CUP AND CARVED SALVER. M. LEBRUN, FRANCE.

1587 Desbordes, —, 22 *Rue des Fossés du Temple, Paris*—Manufacturer.

Scientific instruments:—Indicators of water levels, with plain glasses; manometers; barometer, &c.

1588 Desjardins-Lieux, 4 *Passage St. Avoye, Paris*—Manufacturer.

Specimens of medallions and vases. Small statuettes. Lamps, and embossed objects of all kinds.

1589 Detouche & Houdin, 228 *and* 230 *Rue St. Martin, Paris*—Manufacturers.

Specimens of clocks; large and small regulators; chronometers and watches.

A small regulator, with a second dial, enclosed in a gilt brass case, with four glasses. The new escapement, invented by the exhibitors, is of constant action. It has the advantage over many others, of not disengaging the wheels until after the pendulum has received, by its contact with the small steel ball, the impulse which the latter gives it by its weight.

Another regulator, with free and constant escapement, by the application of a remontoir that acts upon the scapement wheel. It indicates the day of the month, the rising and setting of the sun, and the difference between true and mean time. In order to secure its regularity, its dials are put in action by means of wheels separated from those of the movement.

A regulator of large size, in a splendid brass case, in the style of Louis XV. The movement of this piece is exhibited for its execution and its compensator.

A large regulator in a gilt brass case, with glass front and sides. It indicates the seconds and the equation of time, and has an index for the month and the day of the month. Its pendulum, which is at the same time a compensator by means of levers, was invented by one of the exhibitors. This regulator is exhibited for accuracy and workmanship.

Several other movements, marking half seconds, and with a compensating pendulum; watches and chronometers made on the best principles; good travelling clocks, &c.

Ouranographical apparatus, by M. Guenal, which has been adopted by the city of Paris, by the Conservatory of Arts, and by several colleges. Manufactured only at the establishment of the exhibitors.

1590 Digeon, —, 34 *Route d'Ivry, near Paris*—Manufacturer.

Carbonate, nitrate, and sulphate of strontian. Sulphate of copper and ammoniac, &c.; phosphate, arseniate, muriate, oxalate, cyanide, chloride of copper; carbonate and sulphate of strontian; sulphate, nitrate, muriate, chlorate of barytes, &c.

1592 Duche, —, sen., & Co., 1 *Rue des Petits Pères, Paris*—Manufacturers.

Long and square figured shawls of various kinds.

1593 Dumortier & Co., *Lyons* (*Rhône*)—Manufacturers.

Specimens of French wax candles.

1594 Dupes & Co., 21 *Rue Fontaine au Roi, Paris*—Manufacturers.

Rods for curtains and apartments. Patented in France.

1595 Durand, Francois, 41 *Rue du Bac, Paris*—Goldsmith.

Tea-service, consisting of 17 pieces. Table centre-piece, accompanied with four crystal cups.

1596 Durand, J., *Grenade* (*Haute-Garonne*)—Manufacturer.

Vermicelli, glutinous preparations, and various other sorts of nutritious pastes.

A vase in silver with ornaments in relief. This vase is represented in the Plate 254.

A chased cup and salver, by Mr. Le Brun. These are represented in the Plate 252.

1597 Eloffe, —, 10 *Rue de l'Ecole de Médecine, Paris*—Naturalist; and Boubee, *Paris*—Professor of Geology.

A collection of rocks, minerals, and fossils, arranged to facilitate the theoretical and practical study of the geological and mineralogical sciences.

A collection consisting of 125 specimens in agricultural geology, relating to soils, subsoils, and substances in use, or fitted for use, as manures.

A collection of 1500 specimens in geology, paleontology, and mineralogy, in boxes with compartments, arranged to facilitate comparison and reference. A similar collection of 1000 specimens applicable to agriculture and manufacture, arranged to facilitate the study of applied geology in colleges.

Synoptical table, being a general view of the materials of which the terrestrial globe is composed.

Two tables of geological epochs, presenting a general and select collection of the rocks, minerals, and organised beings which characterize the four geological epochs, designed particularly to extend the taste for the study of geology.

[The advantages of such collections and tabular statements, as are here shown, are extremely great; and no pains have been spared to place before the student in the government establishment of France all those aids which may best enable him to comprehend and apply science. As affording examples of approved methods of this kind, the present series deserves notice, although the views and statements of geological science illustrated will not always be found to agree with those generally admitted and acted on in this country. The collections agree with the authorized educational works of France.—D. T. A.]

1599 Faussemagne, J. M., *Lyon* (*Rhône*), and 8 *Rue du Bœuf*—Manufacturer.

Specimens of isinglass.

1600 Feldtrappe Brothers, 144 *Rue du Faubourg St. Denis, Paris*—Designers.

Specimens of engravings on cylinders, for printed and figured fabrics.

1601 Fetu, Jacques, 10 *Rue de Gravilliers, Paris*—Manufacturer.

Chandeliers. Brackets. Candlesticks. Bed-room candlesticks. Candelabra. Clock. Inkstand. Statuettes.

1602 Foulques, Henry, *St. Gaudens*—Manufacturer.

Specimens of white and gilt porcelain.

1603 Foulquie, Mlle., & Co., 20 *Rue Hauteville, Paris*—Producers.

Collars, points, shawls, kerchiefs, and other articles of knitting-work.

1604 Fourquemin & Godet, 25 *Rue Neuve des Bons Enfans, Paris*—Designers.

Designs for shawls.

1605 Fourneaux, —, 64 *and* 70 *Galerie Vivienne, Paris*—Organ Builder.

An organ.

1606 Fraigneau, Aug., 114 and 115 *Palais National, Paris*—Watchmaker.

Various watches, watch appendages, and alarms. Alarm clocks.

1607 **Frey, jun.**, 2 *Impasse St. Laurent, Belleville*—Engineers and Machine-makers.

A machine for nail-making, upon a new principle.

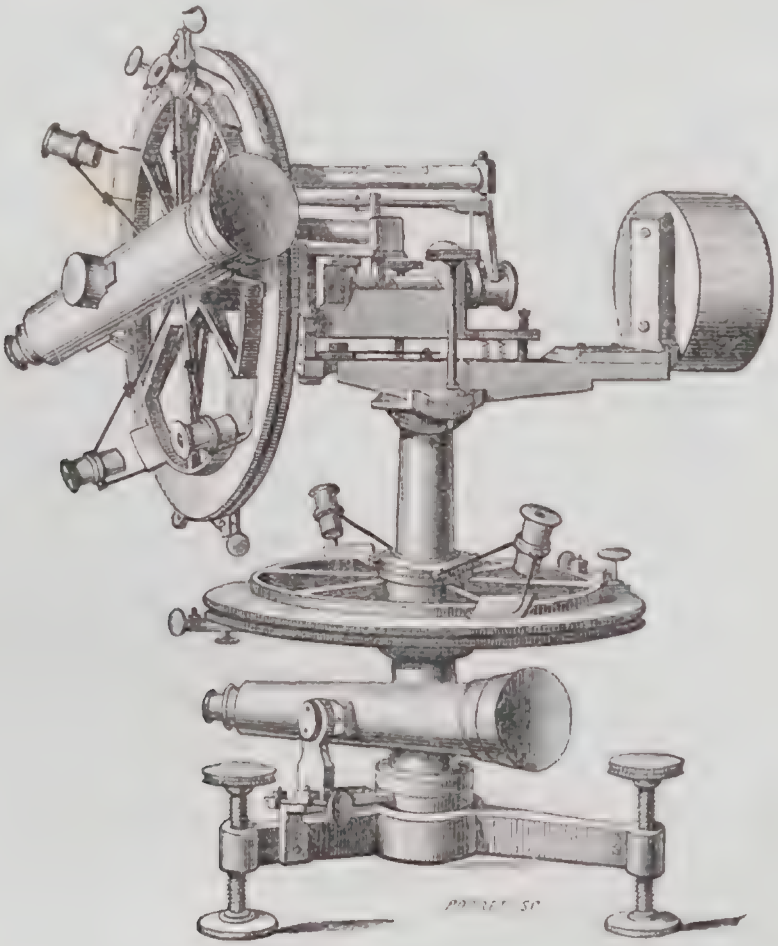
This machine is of small size, and is adapted for the manufacture of nails from two-fifths of an inch to one inch and one-fifth in length. The exhibitor has in his establishment seven various machines of the same description, which manufacture nails from one-fifth of an inch to eight inches in length. These machines are made with a plain framing, and are very easy to be set and repaired. Exhibited for novelty, utility, and economy.

1608 **Frinault, —**, *Orleans* (*Loiret*)—Brassfounder.

Hermetic taps; a new invention for domestic use.

1609 **Froment, Gustave**, 5 *Rue Ménilmontant, Paris*—Manufacturer. (Agent, M. **De Fontaine Moreau**, 4 *South Street, Finsbury.*)

Scientific instruments. Theodolite; and various models of electro-motive power. This theodolite is shown in the following cut.



Froment's Theodolite.

1610 **Gaspard, P. A.**, 1 *Rue Madame, Paris*—Engraver.

Frames containing engravings of religious subjects.

1611 **Gastinne, Renette**, 29 *Allée d'Antin, Paris*—Gunsmith.

Guns; carbines; pistols, in cases; small fancy pistol; self-loading pocket pistol, with cylindric-conical balls; unfinished gun-barrel; model of a machine for loading pistols, and for use as a measure.

1612 **Gauvain, Jean**, 93 *Boulevard du Mont Parnasse, Paris*—Gunsmith.

Double-barrel fowling pieces, with engravings, &c.

1613 **De Geminy, —**, *Marseilles* (*Bouches du Rhône*), 136 *Rue de Paradis*—Manufacturer.

Cotton-seed oil, clarified and bleached.

1614 **Giudicelli & Delabarre**, 254 *Rue Montmartre, Paris*—Mathematical Instrument Makers.

Universal rules, of various descriptions. A patented invention for precise measurements.

1615 **Gocht, Frederick**, 10 *Rue des Marais St. Martin, Paris*—Cabinet-maker.

A lady's writing-desk, in Courbary wood, inside in rosewood and grey maple.

1616 **Grangoir, Ernest**, 28 *Rue de Bourgogne, Paris*—Manufacturer.

A satin fancy corset.

1617 **Grignon, Meusnier**, *Rue d'Orleans, Paris*—Manufacturer.

Bronze clocks, candelabra, statuettes, &c.

1618 **Grolleau & Deville**, 33 *Rue du Sentier, Paris*—Manufacturers.

Dresses (Foulard pattern), barège, silk gauze, &c. Designs produced at the establishment of the exhibitors; printing executed by Messrs. Guillaume and Son, St. Denis (Seine).

1619 **Gueyton, A.**, 11 *Rue Chapon, Paris*—Jeweller.

Silver statue; The Prince of Wales in 1847.

Group in silver: The wild Horse and Slave.

Silver cup, exhibiting the ancient, mediæval, and modern race-course; the education of Achilles; and wild horses.

Cups; hunting scenes, bull-fight, and etching.

Ornamental boxes, in renaissance, mixed Gothic, mediæval, and other styles. Nosegays and pastil-burners.

Pictures: French and Dutch festivals, and scenes in Syria.

Sabres and swords, in ornamented steel, precious stones, &c. Sabre presented to Col. M. Guinard by the Parisian Legion of Honour. Fancy sabres and swords. Freemason's swords.

Hunting-knives, ornamented with precious stones, antique heads, &c.: subjects—“Hunter and Fox,” “Page Asleep,” “Hunting Emblems.”

Silver daggers, with etchings. Silver bracelets, with designs: “Arabian Camp,” “Hunting emblems.”

Silver snuff-boxes, with etchings and designs: “Shipwreck of the Medusa," "Prayer in the Wilderness," "Lion in Shield," "Stags," &c.

Ornamented casolette and bonbonierres. Seals, with various designs: "Truth," "Two Children supporting the World," &c.

Chatelaines, cigar-holders, and purses. Rings, with various devices. Ornamented brooches, sticks, whips, and portfolios. Galvano-plastic plates, &c.

1620 GUIMET, JEAN-BAPTISTE, *Lyon* (*Rhône*)—Manufacturer.

Specimens of ultramarine blue, applicable to manufacturing purposes and the fine arts.

1621 HEBERT & SON, 13 *Rue du Mail, Paris*—Manufacturers.

Long and square Cashmere shawls, of pure wool; various grounds.

1622 HENRY, FREDERIC, 8 *Rue de Limoges, Paris*—Manufacturer.

Articles in embossed steel, including desk-seals, purses, pocket-books, ladies' jewellery cases, statuettes, and Parisian fancy work.

1623 HENNEQUIN, —, 17 *Rue Chapon, Paris*—Manufacturer.

Specimens of a new species of jewel-casket, called "Colombe," for holding brooches and bracelets. This casket is made in the form of a beautiful bird, and shows the jewellery in an advantageous manner. Other specimens of jewel-caskets.

1624 HERVE BROTHERS, 127 *Chemin de Charenton—Bercy*—Manufacturer.

Specimens of gelatine and glue.

1625 HOOPER, GEORGE, 6 *Rue des Fossés Montmartre, Paris. Manufactory, Rossein* (*Aisne*) and *Lyon* (*Rhône*)—Manufacturer.

Neckerchiefs and mittens in lace. Shawls, dresses of various patterns, and embroidered and printed novelties.

1626 HOUSSARD, EUGENE FRANCIS, *Persan* (*Seine and Oise*), and *Rue St. Honore, Paris*—Manufacturer.

French vermicelli and other pastes, moulded in various forms.

1627 HOUBIGANT, CHARDIN, 19 *Rue de Faubourg, St. Honoré, Paris, and Regent Street, London*—Glovers.

A great variety of pairs of gloves, made of skins matched in colour and quality.

1628 HOULLIER, BLANCHARD, 36 *Rue de Cléry, Paris*—Gunsmith.

A brace of pistols, inlaid with gold and platina, and carved; enclosed in an ornamental case. A pair of double guns, with various improvements.

Two fowling-pieces, of which the barrels are lined in their entire length with a tube of platina without solder. These barrels, of which the range is at least equal to the range of any new gun, will remain in the same condition for an indefinite period, platina being unalterable by oxydation, a process by which the interior of the iron guns is soon injured.

1629 JACOB, PETIT, 32 *Rue de Bondy, Paris*—Manufacturer.

A fountain in ornamental porcelain. Porcelain biscuits, designs for patterns.

1630 JOUHANNEAUD & DUBOIS, 5 *Rue de l'Entrepôt, Paris*—Manufacturers.

Vases, decanters, clocks, scent-bottles, tête-à-têtes, &c. Specimens of porcelain of different colours, of Sèvres blue china, and articles in imitation of the Chinese and Javanese productions. Various articles of an ornamental kind for lamps, &c.

1631 JOURDAIN, XAVIER, *Altkirch* (*Haut-Rhin*)—Manufacturer.

Specimens of various fabrics, jaconets, organzins, muslins, &c.

1632 KERCHER & WESTERMANN, *Metz* (*Moselle*)—Manufacturers.

Articles in stamped iron, tinned or varnished.

1633 KLEINJASPER, J. F., 296 *Rue St. Honoré, Paris*—Pianoforte Maker.

A cottage pianoforte.

1634 KOECKLIN BROTHERS, *Mulhouse* (*Haut-Rhin*)—Manufacturers.

Chintzes, printed cambrics, barèges, woollen, and half-woollen stuffs, &c.

1635 LAASS D'AGUEN, VICTOR, Inspector at the National Institution of the Juvenile Blind, *Paris*.

Geographical maps, in relievo, and writing boards, for the use of the blind, a new invention; metallic plates for a new system of printing.

1636 LACROIX BROTHERS, *Angoulême* (*Charente*)—Manufacturers.

Various sorts of stained and ornamental papers.

1637 LAIGNEL, JEAN-BAPTIST, 13 *Rue de la Harpe, Paris*—Engineer.

A model of drags and breaks. This invention has been adopted in Belgium, Prussia, and for the inclined planes of Liege and Aix la Chapelle, where it has been employed successfully on several occasions where accidents have occurred by the ropes breaking.

1638 LAMBERT, SAMUEL, 34 *Rue Verte, Paris*.

Two spheres of silvered crystal; two crystal vases, silvered; and several similar articles.

1639 LANDRON BROTHERS, *Meung-sur-Loire* (*Loiret*)—Tanners.

Leather made from the skins of different animals, natives of France and of Buenos Ayres.

1640 LAUGIER, —, *Omgle* (*Basses Alpes*)—Producer.

Samples of honey and wax.

1641 LANNE, ETIENNE, 130 *Rue du Temple, Paris*—Cutler.

Scissors, knives, pen-cutters and other articles of cutlery. Table cutlery, razors, and razor-strops.

1642 LAPEYRE, ROB, & CO., 112 *Rue de Charenton*—Manufacturer.

Specimens of stained paper, &c.

1643 LATELETIN & PAYEN, *Place St. Nicholas des Champs, Paris*—Manufacturer.

Bracelets, brooches, seals, trinkets, and various articles of jewellery.

1644 LECOCQ, HYPPOLITE, *Rue des Frans-Bourgeois, Au Marais*—Manufacturer.

Frames of ornaments in stamped brass. Hot-air stoves, and various apparatus for warming houses. Heating apparatus, without pipes, which may be moved from room to room, and placed without danger on boards or carpets, the stand being kept constantly cool by the ventilation produced by the apparatus. After being lighted in the morning, it will burn for 12 or 15 hours, without requiring fresh fuel.

1645 **Leduc, Charles**, *Nantes (Loire-Inférieure)*—Rope Maker.

Specimens of fishing-rods, lines, and nets. Ship ropes.

1646 **Lefébure, Aug.**, *Bayeux, (Calvados), and Rue de Cléry, Paris*—Manufacturer.

Thread lace counterpane. Alençon lace scarf and lappets. Shawl, point scarf, veil, and black silk lace flounces. Black silk blond mantles, for Spain and Mexico.

1647 **Lefévre, B.**, 109 *Rue Montmartre, Paris*—Manufacturer.

Various kinds of varnish for the arts, buildings, carriages, &c.

1648 **Lefévre, —**, 40 *Rue Fontaine au Roi, Cité Holbacher, Paris*—Manufacturer.

Cash-boxes, cigar-cases, and other articles produced by the galvano-plastic process. Patented in England.

1649 **Lemire & Son**, 1 *Rue des Feuillants, Lyon (Rhône)*—Manufacturers.

Silk stuffs for furniture and church ornaments.
Velvets, damasks, brocade, &c.

1650 **Lerolle Brothers**, 1 *Chaussée des Minimes, Paris*—Manufacturers.

Bronzes, clocks, candelabra, chandeliers, statuettes, &c.

1650a **Leon, Lalaune**, 18 *Rue de Fleurus, Paris*—Civil Engineer.

A calculating rule with sliding rule. An abacus, or universal arithmetician, and a tableau, by which by an easy combination of straight lines and figures, calculations can be made nearly as correct as by the sliding rule.

1650b **Langlade, —**, *Paris*—Inventor and Manufacturer.

Varnished cloth; invented by the exhibitor. Patented.

1651 **Liégard, H.**, 19 *Val St. Catherine, Paris*—Saddler.

Framed designs, representing specimens of saddles, and articles of military accoutrements.

1652 **Lortic, P. M.**, 199 *Rue St Honoré, Paris*—Bookbinder.

Various publications. Specimens of fancy bookbinding.

1653 **Mabrun, Paul**, 21 *Place des Vosges, Paris*—Manufacturer.

A large geographical and hydrographical map of France.
Two chronological tables of the histories of France and England.
Four great pictures of the Four Evangelists.

1654 **Magnin, Jean Marie**, *Villefranche (Rhône)*—Inventor.

Sewing, embroidering, and cord-making machine, called Cousobrodeur, a new invention, patented in England. Samples of sewing on different stuffs.

[This machine, which is in the form of a chiffonier or work-table, three feet high, is furnished with a pedal and surmounted with a box in gilt bronze, which contains the principal machinery. The workman seated before it, sets it in motion by means of a pedal, while with his hands he guides at will, horizontally, a piece of stuff either single or double. Each stroke of the pedal causes a crotchet hook to pass through the stuff, and forms a series of stitches equally adapted for sewing or embroidery. A screw enables the workman to vary, with great accuracy, the size of the points of embroidery; and by the same means the sewing may be slackened or tightened at will. By a series of tubes of different sizes, the number of the needles may be changed, so that the same machine may be used for the manufacture of almost every kind of needlework at the rate of 250 stitches a minute. When used for embroidery, the needle of the machine, turning by means of a second pedal moved by the left foot, enables the workman to execute all sorts of patterns on the coarsest as well as the finest stuffs.]

1655 **Mallet & Co.**, 261 and 263 *Rue St. Denis, Paris*—Manufacturers.

Specimens of feathers and flowers of all kinds, for mourning and second mourning.

1656 **Mayer & Co.**, 64 *Rue du Marais, St. Martin*—Producers.

A vase, imitation porcelain, in gilt bronze, and other articles, painted and decorated.

1657 **Menet, Jean**, *Boulieu and Annonay (Ardèche)*—Producer.

Yellow and white organzines, of different qualities and preparation. Yellow and white woof; skeins of yellow and white spun raw silk.

1658 **Mercier, Claude Victor**, 28 *Rue de Gravilliers, Paris*—Manufacturer.

Snuff-boxes in tortoiseshell, wood, and ivory, rhinoceros, palm and olive-tree wood, rosewood, &c.

1659 **Meurant Brothers, & Willemain**, *Charleville (Ardennes)*. Depôt, 73 *Faubourg St. Martin*—Machine Makers.

A press, with an iron bucket and zinc basin. A press of a different model.

1660 **Michel, Pascal**, 27 *Quai d'Anjou, Ile St. Louis, Paris*—Sculptor.

Marble groups of three figures. A Carthusian monk, plaster cast.

1661 **Mittelette, Victor**, *Soissons (Seine and Oise)*—Engineer.

Thrashing machines; winnowing machines.

1664 **Monet, —**, 32 *Rue Meslay, Paris*—Manufacturer.

Chronometers, indicating the days of the week, month, and year, &c.

1665 **Montal, Claude**, 5 *Boulevard Montmartre, Paris*—Musical Instrument Maker.

Three cottage pianofortes.

1666 **Morel, Frères**, *Charleville (Ardennes)*—Manufacturers.

Moulded cast-ironware; projectiles. Wrought-iron nails. Specimens of ironmongery, &c.

1667 **Mouchet, —**, *Petit Montrouge (Seine)*—Manufacturer.

A model of a machine for kneading bread. There are ten of these machines in full operation.

1668 **Mourceau, H.**, 27 *Rue du Mail, Paris*—Manufacturer.

Fabrics for furniture, folding-doors, window-curtains, and table-covers. Manufactured of wool, silk and wool, and silk, in imitation of the Aubusson and Gobelin tapestries.

1669 **Noel, —**, 16 *Rue du Ponceau, Paris*—Manufacturer.

Specimens of gilt and oxidised silver eye-glass chains, neck-chains, leontines, watch appendages, and cornelian seals.

1670 **Nourry Brothers, & Meynard**, *Lyon (Rhône)*—Manufacturers.

Specimens of silk handkerchiefs, corahs, white damasks, &c.

1671 ODIOT, —, 26 *Rue Basse du Rempart, Paris*—Jeweller.

Specimens of table services in various styles, tea services, and other articles of silversmiths' work.

1673 PARISET, FRANÇOIS, 192 *Quai Jemmapes, Paris.*—Manufacturer.

Specimens of burners for gas-lights. A regulating apparatus for the pressure of the gas.

1674 PAYEN, ADRIEN-ROMAIN, 18 *Boulevard St. Denis, Paris*—Manufacturers.

Specimens of gold jewellery: twelve sets of jewels, each representing the peculiar style and taste of a nation—the argolian for the Mexican, the coquette for La Martinique, &c. Filigree work, in plain or polished gold, pearls, &c.

1675 PEPIN-VEILLARD, *Orleans* (*Loiret*), and 14 *Faubourg de la Madeleine, Paris*—Manufacturer.

Samples of woollen blankets.

1676 PEYROULX, HIPPOLYTE, *Gouzon, Canton de Jarnages* (*Creuze*)—Manufacturer.

Specimen of smalt or pure cobalt blue.

Two vases of porcelain de Sèvres, coloured with smalt blue.

1677 POYET, —, *Paris*, and 201 *Piccadilly*—Artist.

Two pictures in crayon, in a new style.

1678 PIVER, ALPHONSE, 103 *Rue St. Martin, Paris*—Manufacturer.

Various kinds of soap, manufactured with the scents of flowers, without the aid of essential oils; perfumed oils and essences; almond cream soap for shaving. Smelling-bottles and dressing-cases. At the manufactory in Grasse (var), and the establishment at Paris, the exhibitor employs annually 80,000 lbs. of petals of orange-flowers, 54,000 lbs. of rose-leaves, 32,000 lbs. of jessamine, 32,000 lbs. of violet, 20,000 lbs. of tubereuse, 16,000 lbs. of mignionette, and 16,000 lbs. of lilac.

1679 PLAGNIOL, —, 5 *Rue Pastourelle, Paris*—Optician.

A variety of spectacles. Ivory and polished opera glasses. Daguerreotype pictures.

1680 POULET, JACQUES FREDERIC, 12 *Rue Pierre Levée, Paris*—Manufacturer.

Lead wire, for horticulture, to replace rush, osier, and every kind of fastening now in use; it does not oxidate, and favours the growth of plants. Zinc labels and links.

1681 PRELAT, —, 41 *Rue de la Ferme, Paris*—Gunsmith.

Brace of pistols, with carved and chased gold mountings. Five-barrelled pistols, charges fired separately. Engraved and carved double-barrelled gun, charged at the stock, &c. The first percussion guns were manufactured in the exhibitor's workshops.

1682 PRAT, A., & AGARD, F., *Aix* (*Bouches du Rhône*)—Producers.

Specimens of marine salts; salt in large crystals, the result of natural crystallisation; minute crystals obtained from saline solutions by means of chloride of magnesia.

1683 QUENNESSEN, —, 4 *Rue du Bouloi, Paris*—Platina Refiner.

Platina crucibles, capsules, and various other chemical apparatus in platina. Apparatus of platina for the concentration of sulphuric acid, with syphon, the tubes of which are made without being soldered. Apparatus of platina for refining gold and silver; palladium and iridium for the nibs of gold pens.

1684 RANDON, L., *Caën* (*Calvados*), and 9 *Passage des Petits Pères, Paris*—Manufacturer.

Specimens of white silk blondes; scarf, overall, head-dress, &c. Large gold and silk lappets.

1685 RIEUSSEC, N., *Avenue du Bel Air, St. Maude, near Paris*—Manufacturer.

Specimens of chronometers and watches.

1686 RIGAULT, jun., *Orléans* (*Loiret*)—Manufacturer.

Samples of vinegar.

1687 ROLLER & BLANCHET, 26 *Rue Hauteville, Paris*—Manufacturers.

Four pianofortes of different descriptions.

1688 ROSSWAG, A., & SON, *Schelestadt*, (*Bas-Rhin*); *Lyon* (*Rhône*) and 321 *Rue St. Denis, Paris*—Paper Manufacturers.

A cylinder for making continued laid paper.

Metallic cloths and gauzes. These gauzes are intended to permit the ready percolation of the superfluous water from the pulp, as it is passing along the machine.

1689 ROUCOU, J., *Belleville* (*Seine*), and 21 *Rue de Paris*—Manufacturer.

Daggers, trophies, hangers, &c., with reproduction of ancient frosted work, inlaid work, and filigree.

1690 ROUX, F. M., *St. Chamond* (*Loire*)—Manufacturer.

Silk trimmings and lacings of various kinds.

1691 SAYE, P. G., 9 *Rue du Parc-Royal, Paris*—Manufacturer.

Bronze clocks, statuettes, inkstands, and caskets.

1693 SEGUIN, —, 22 *Rue d'Assas, Paris*—Marble Cutter.

Samples of different marbles.

Marble statuettes and statues, representing various incidents in the life of Napoleon. Quartz paper-presser.

[Of the samples of marbles here exhibited—most of which are obtained from French quarries—some are of great beauty, and deserve careful notice. The material of which the statuettes are made is particularly good, and large slabs of it have been obtained.—D. T. A.]

1697 SIMON, S., *Lyon* (*Rhône*)—Manufacturer.

Specimens of japanned calf leather.

1698 SOUCIN, C., *Chaumont* (*Haute-Marne*)—Tanner.

Specimens of dressed calf-hides.

1699 SOUFLETE, 171 *Rue Montmartre, Paris*—Manufacturer.

A grand pianoforte. Two cottage pianofortes.

1700 SUCHET, J. D., 3 *Rue St. Catherine, Lyon* (*Rhône*)—Manufacturer.

Corsets without seams.

1701 THOLLEN, —, *Grenoble* (*Isère*)—Manufacturer.

Specimens of various essences and perfumed liquids.

1702 THOURET, F. A., 31 *Place de la Bourse, Paris*—Silversmith.

Specimens of plated and electro-plated silver-work, manufactured by a process, patented in France and England.

1703 TROUPEAU, C. M., 4 *Rue Grange Batalière, Paris*, and *Upper Charlotte Street, Fitzroy Square*—Optician.

Patent diurnal reflectors. An apparatus for reflecting light and lighting up dark rooms, counting-houses, kitchens, workshops, cellars, tunnels, ships, passages, staircases, and all places which have only borrowed and insufficient light. The reflector may also be made use of with advantage for lamps or gas burners.

1704 Vatin, —, jun., & Co., 13 *Rue de Cléry, Paris*—Manufacturers.

Specimens of fancy gauze, and woollen and silk fabrics.

1705 Verstaen, L. N., 6 *Rue Beaujolais, Paris*—

Samples of strong boxes or safes.

1706 Videcoq & Simon, 35 *Rue des Jeûneurs, Paris*—Manufacturers.

Chantilly black lace shawls. Veils, lappets, and set of Alençon point lace.

1707 Villemsens, —, 57 *Rue St. Avoye, Paris*—Manufacturer.

Bronze candelabra, groups, lamps, &c. Gothic branch candelabra; Gothic stand for large candelabrum, renaissance style; gilt bronze ewer, Florentine style; three groups in gilt and silvered bronze; lions and tigers fighting, &c.

1708 Guillot, —, jun., 17 *Rue du Bouloi, Paris*—Manufacturer.

Specimens of Bourdeaux calf leather, and boot fronts.

1709 Barbedienne & Co., 30 *Boulevard Poisonnière, Paris*—Producers. (Agents, Munro, Jackson, & Graham, 37 and 38 *Oxford Street, London.*)

Sculpture obtained in reduced proportions, by mechanical processes, A. Collas, inventor; bronzes of art; gates of the Baptistry at Florence, half the size of the original.

Bookcase in ebony and bronze, with select subjects from the works of Ghiberti and De Michelonge; executed by Clesinger, sculptor.

1710 Lapeyrière, —, Iron Works at Bruniquel (*Tarn-et-Garonne*). (Represented by Mons. Détape, *Paris.*)

Bars of charcoal iron, made for conversion into steel, and specimens for other purposes, after being subjected to torsion, punching, &c. Files and horse-rasps made from steel manufactured from this iron by Messrs. Ibbetson Brothers, Sheffield.

1711 Martin, Louis Pierre Alexander, 13 *Rue Fontaine au Roi, Paris*—Inventor and Manufacturer.

Percussion organ with expression. The instrument contains all the latest improvements that have been made in the harmonicon.

1712 Duclos, Jules, 47 *Rue Richelieu, Paris*—Gunsmith.

Specimens of guns and pistols. Gun with carved ebony butt end; barrels welded with copper, richly engraved, inlaid with gold and silver, on a new system. The barrels manufactured by M. Leopold Bernard.

1713 Paillard, Alexandre Victor, 8 *Rue St. Claude, au Marais, Paris*—Manufacturer.

Bronzes, clocks, candelabra, &c. Clock in bronze on a marble base, subject—Daphnis and Chlöe; clock in the style of Elizabeth: two statuettes in bronze—d'Aguesseau and L'Hôpital; pair of vases in porcelain; group in bronze—boys wrestling.

1714 Genoux, Francois, 236 *Rue du Faubourg St. Antoine, Paris*—Manufacturer.

Samples of stained paper.

1715 Delicourt, Etienne, 157 *Rue de Charenton, Paris*—Manufacturer.

Seven pannels of stained papers; rolls of stained paper; and a book for showing the contrast of colours.

1717 De Bastard, Count Auguste, 95 *Rue St. Dominique, Paris*—Producer. (Agent in London, C. de Cosson, 26 *Percy Street, Rathbone Place.*)

Collection of writings, paintings, and ornaments of the illuminated French manuscripts, from the time of Clovis to the accession of the Bourbons. Greek-Byzantine paintings, from the ninth to the fourteenth century. German paintings, from the tenth to the thirteenth century. Roman, Merovingian, Carlovingian, Lombardic, and Saxon writings of the fifth, sixth, seventh, eighth, and ninth centuries. Carlovingian, Caputian, and German paintings of the eighth, ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth, and sixteenth centuries. The expense of the publication of this unique work has amounted to 80,000*l.* sterling. It was undertaken by the exhibitor to elucidate the history of art in Greece, France, and Germany, during the early period when paintings were only found in manuscripts.

1718 Docagne, S., 3 *Rue de Grammont, Paris*—Manufacturer.

Point d'Alençon lace.

1719 Alexandre & Son, 39 *Rue Meslay, Paris*—Manufacturers.

Two melodium organs. Organ on a new principle.

1720 Froment-Meurice, 52 *Rue St. Honoré, Paris*—Manufacturer.

Silver-gilt toilet, beautifully chased, and ornamented with precious stones; presented by subscription, on the occasion of the marriage of H.R.H. Louise Maria Thérèse of France, and H.R.H. Charles Ferdinand de Bourbon, Infanta of Spain, executed under the superintendence of M. Duban.

Chased iron casket, the property of the Comte de Paris. This curious casket is of cast-iron, each ornament executed separately on the forge by the limner and the chaser.

Gothic chalice, executed in gold, silver, and enamel. The six scriptural paintings in enamel, were executed under the direction of the Abbè Combalot.

A silver vase, presented by the Hospital of Paris to Lieutenant-General Baron Feuchères. The portrait of the General, in sculptured malachite, was executed by N. Pradier, the handles represent two figures, Benevolence and War.

Silver testimonial presented to M. Emmery, engineer, by the city of Paris. The sculpture and chasing by M. Klagmann. The plate 261 represents this object. An ecclesiastical vessel, gilt and enamelled. A sword, presented to General Cavaignac, by the inhabitants of Lot. A shield in silver and iron, presented as a prize at the races of Chantilly, by the President of the Republic. A sword, presented to General Changarnier, by the workmen of Montluçon and Commentry. The ornamental hilt of this weapon, with two others, is represented in the adjoining plate 228. A vermilion cup, ornamented with precious stones: subject, "French Comedy." Various cups and articles of jewellery. Diamond and enamelled bouquets. Bouquets composed entirely of diamonds. Jewellery in the Moorish, Byzantine, and Renaissance style, &c.

A carved ivory tankard. This object is shown in the adjoining plate 248.

1721 Festugière, Eugene Jean, & Co., *Aux Eyzies, Canton de Tayac* (*Dordogne*)—Manufacturers.

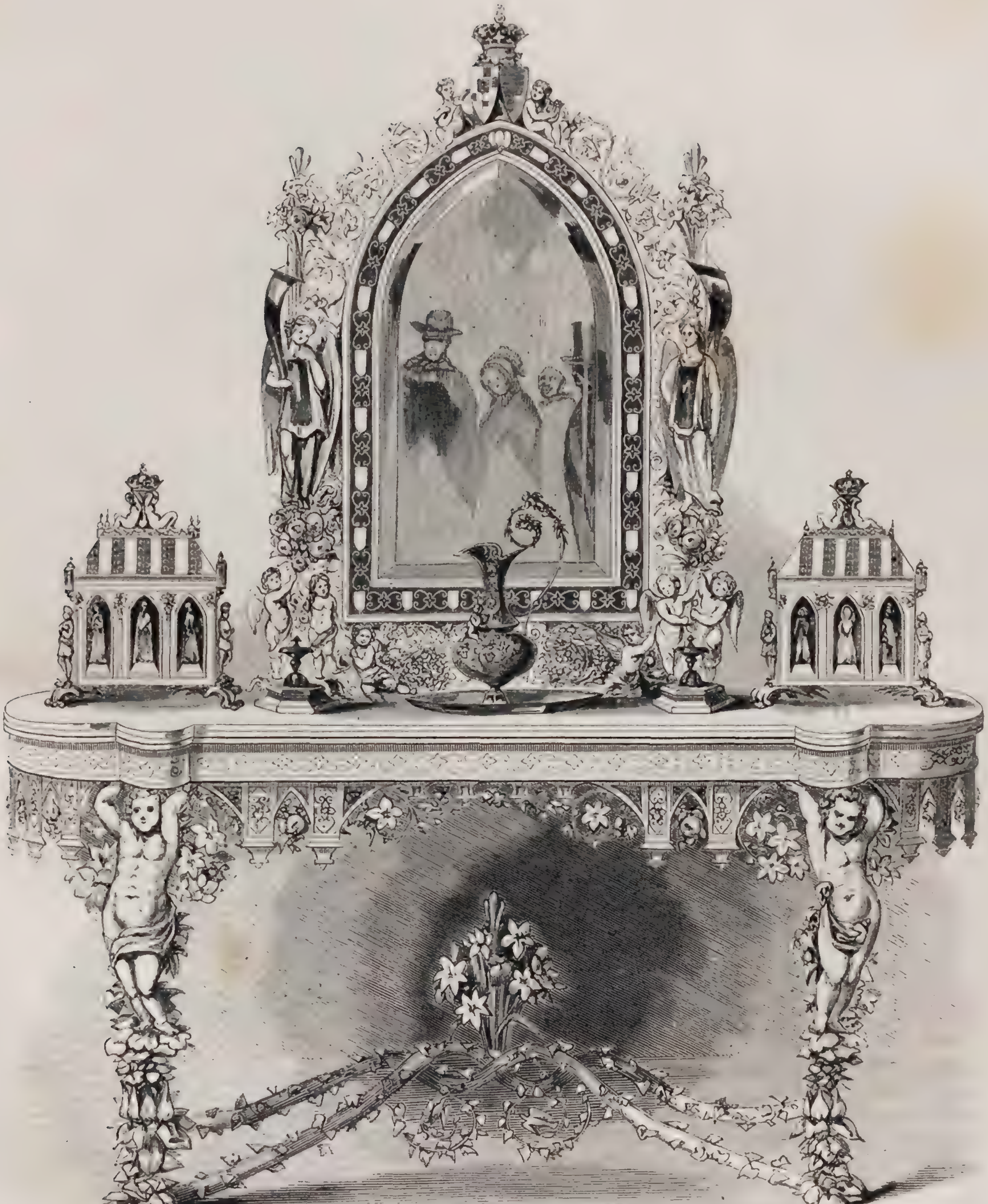
Samples of cast and wrought iron.

1722 Godefroy, —, 14 *Cité Trevise, Paris*—Producer.

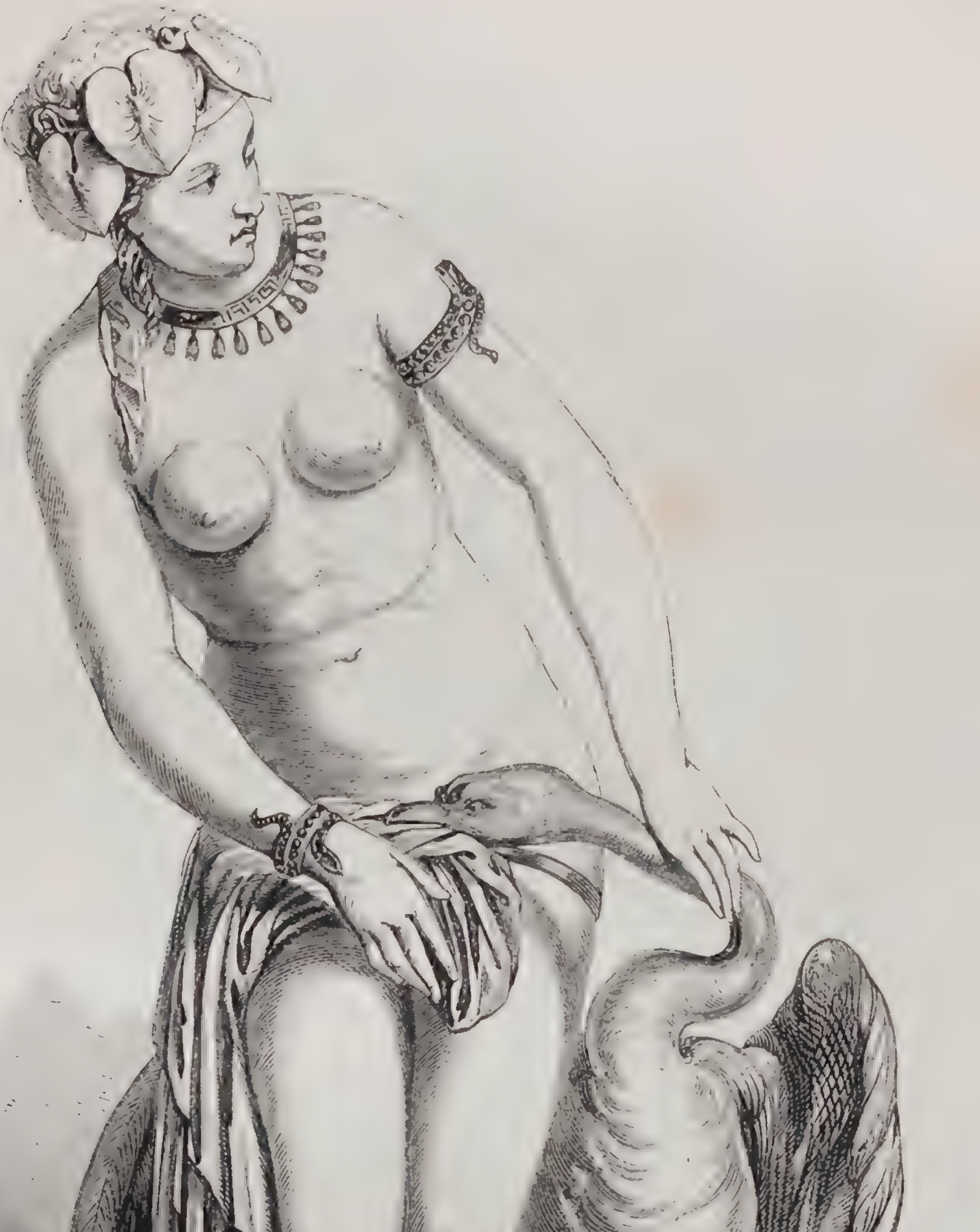
Album of the society of literary men. Collection of drawings and autographs.

1724 Lagrèze, —, 8 *Rue Michel-le-Comte, Paris*—Manufacturer.

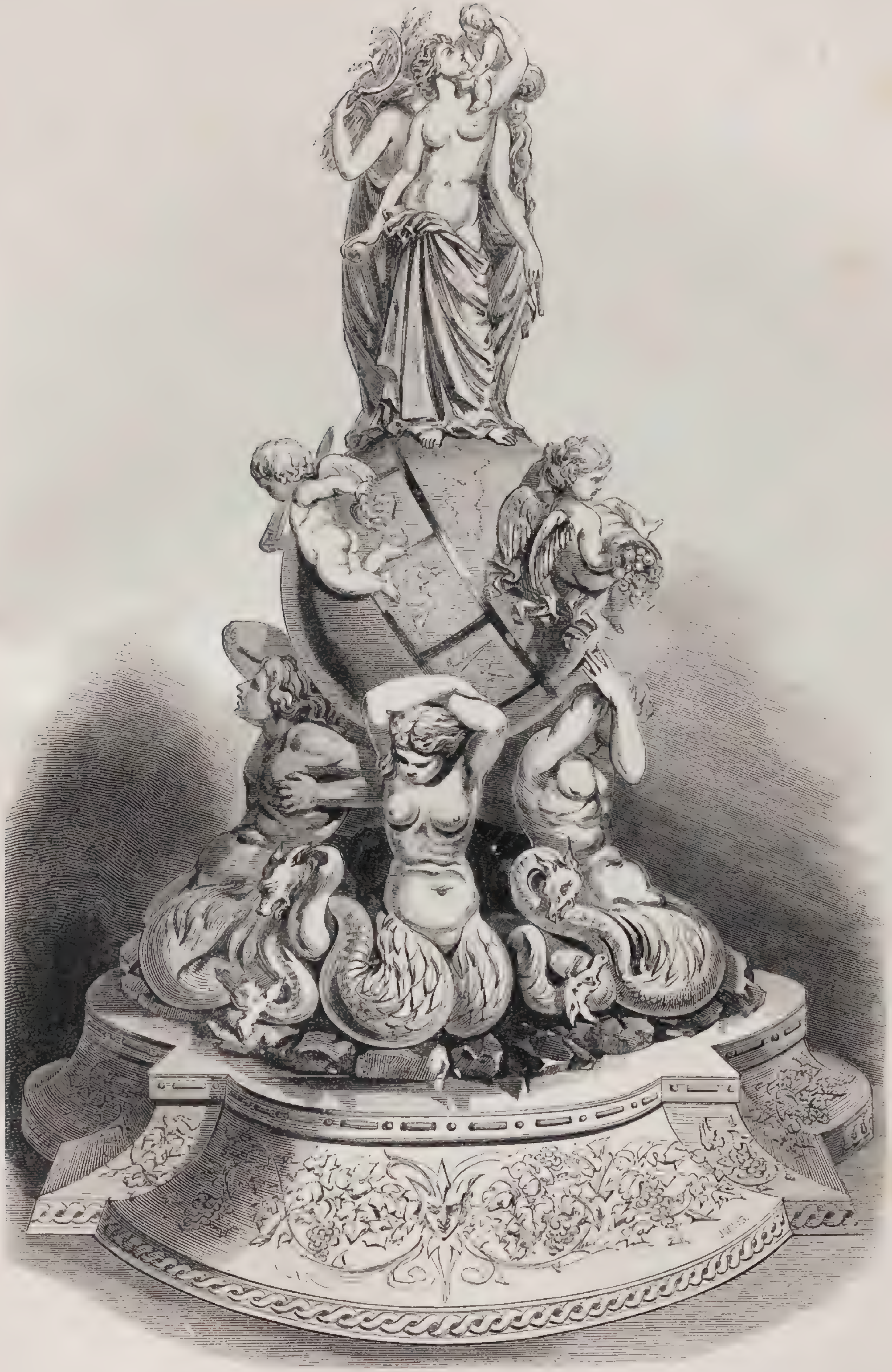
Specimens of guns: hunting-guns, single and double pistols, pocket-pistols, &c.



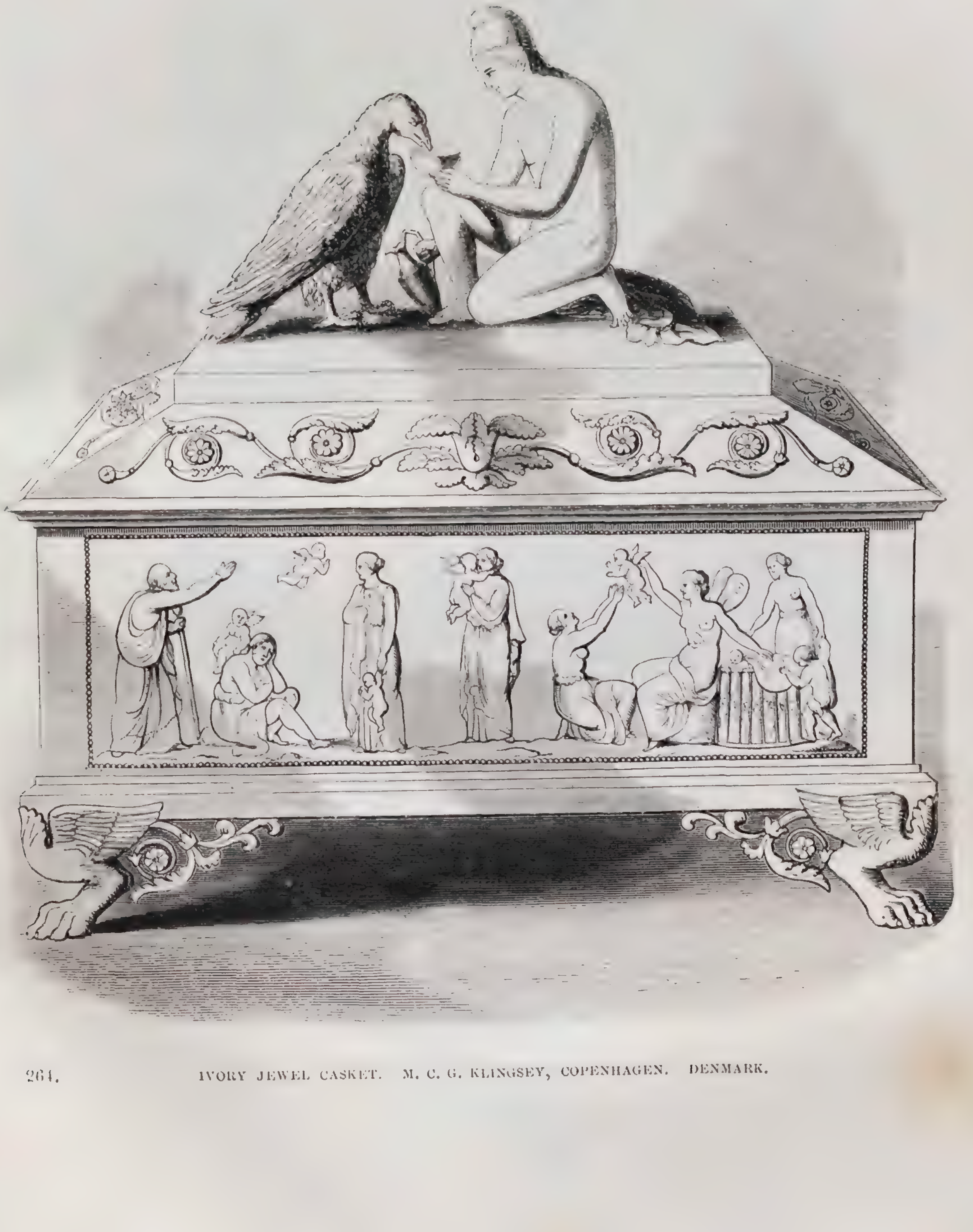
279. TOILET TABLE. THE PROPERTY OF THE DUCHESS OF PARMA. M. FROMONT, MEURICE. FRANCE.



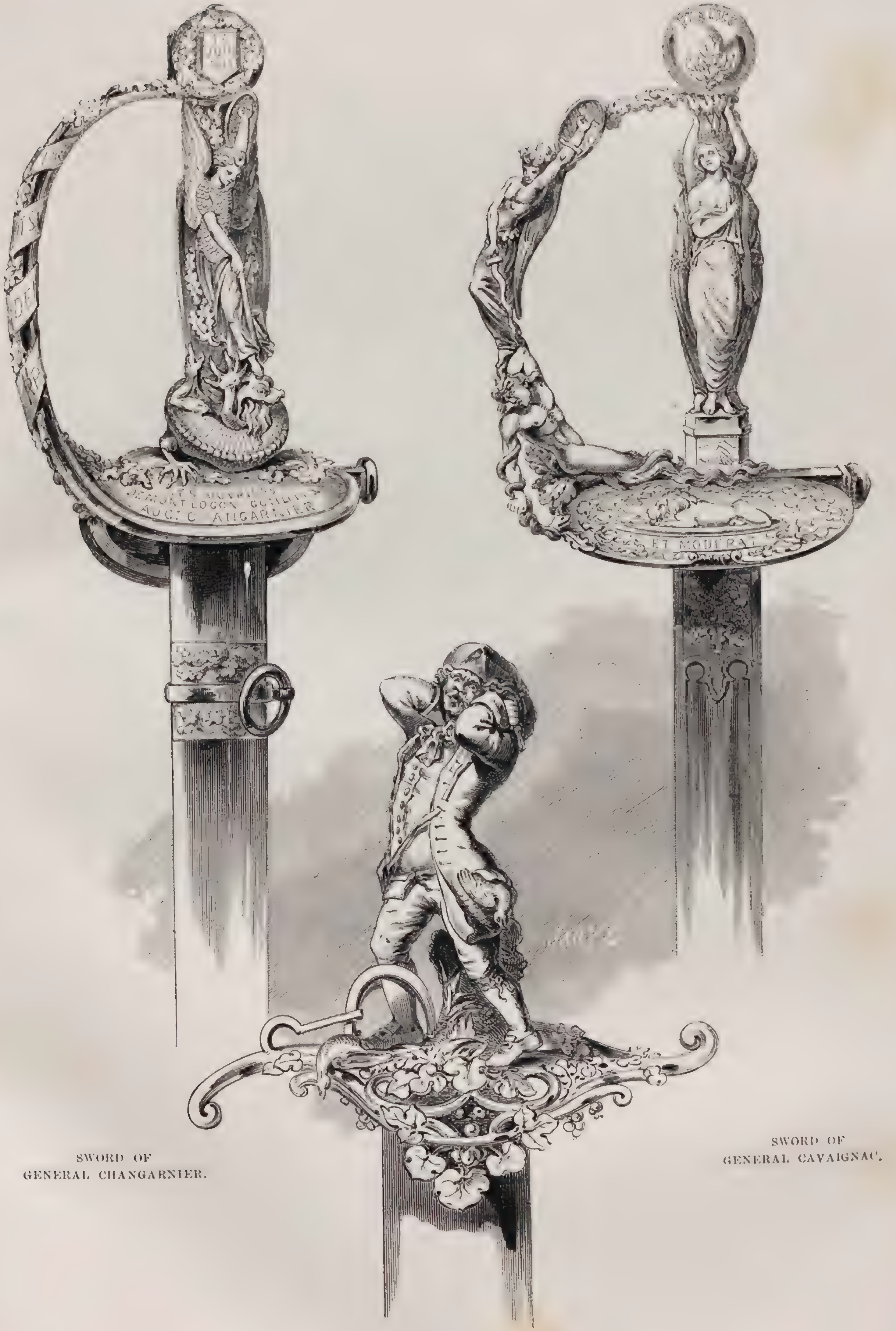
STATUE IN IVORY. FRANCE.



261. SILVER ORNAMENT. FRANCE.



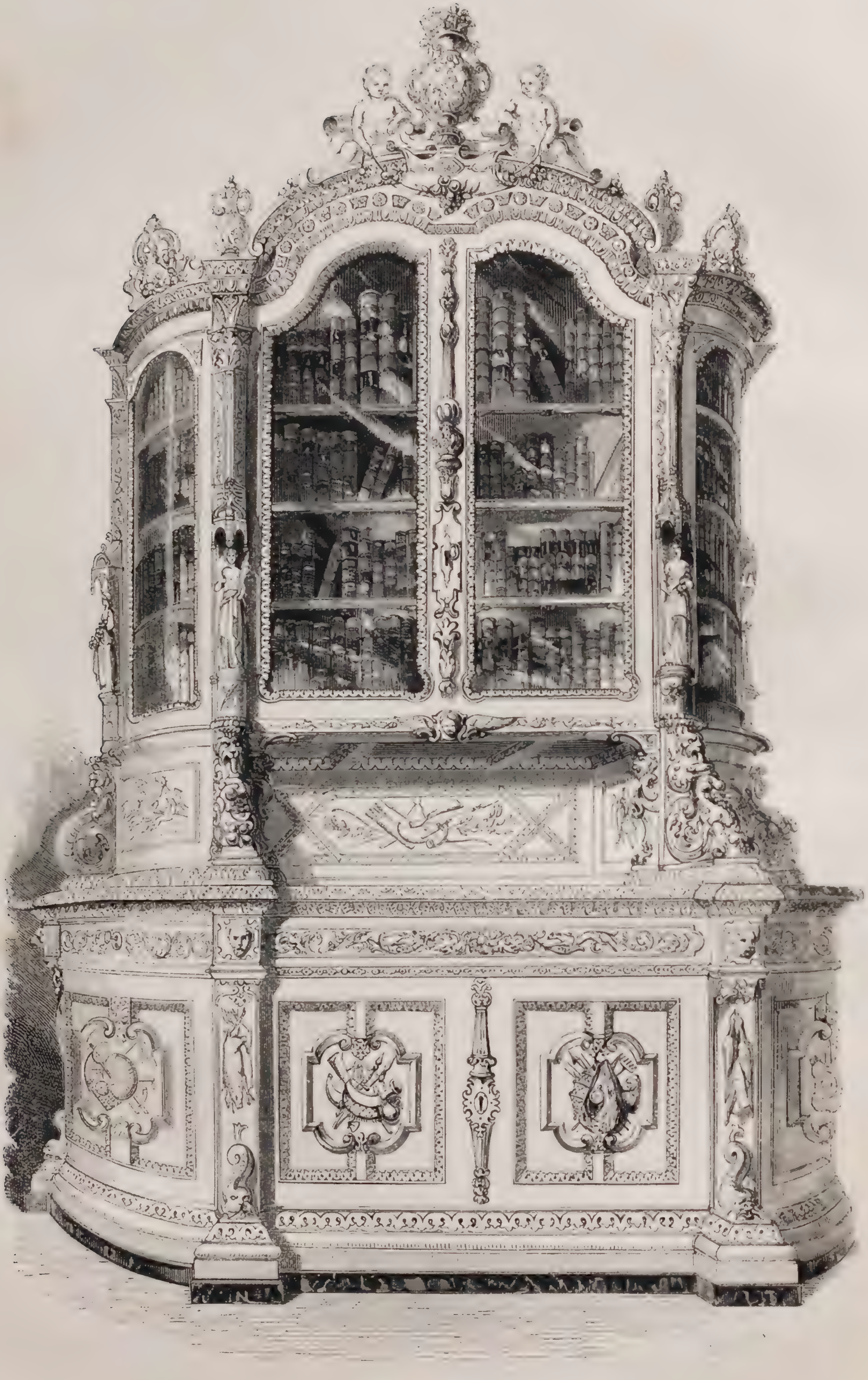
264. IVORY JEWEL CASKET. M. C. G. KLINGSEY, COPENHAGEN. DENMARK.



SWORD OF
GENERAL CHANGARNIER.

SWORD OF
GENERAL CAVAIGNAC.

HUNTING KNIFE. FRANCE.



265.

CARVED BOOKCASE. M. KRIEGER AND CO. FRANCE.

1725 **Sax, Adolphe, & Co.**, 50 *Rue St. Georges, Paris*—Manufacturers.

Musical instruments, made of brass and wood. Saxophone, and complete set of instruments for military bands, invented by the exhibitor, and adopted by the French government for the army.

1726 **Morgant, Eugene**, *Guines* (*Pas de Calais*)—Manufacturer.

Two transparent water-proof window-blinds. These blinds are not affected by the light, or by alterations of temperature, or atmospheric changes, and remain unaltered for any length of time.

1727 **Rastouin, Vincent**, *Blois* (*Loire et Cher*)—Carriage Maker.

Specimens of carriage axle, and nave boxes.

1728 **Lemseigne, Louis**, 72 *Rue St. Jacques, Paris*—Manufacturer.

Specimens of engines, apparatus, mathematical instruments, tools, &c.

1729 **Chevalier, Charles**, 158 *Palais National, Paris*—Optician.

Magnifying glasses; improved camera lucida; photographic apparatus, with compound glasses; magnifying opera glasses; improved telescopes, photographic impressions.

1730 **Bourdin, Condrieux**, *Rhône*—Producer.

Specimens of dyed thrown silk.

1734 **Morel, Brothers**, *Charleville* (*Ardennes*)—Manufacturers.

Specimens of cast-iron; earthenware; projectiles; nails made by machinery; enamelled earthenware; cut hardware; rifle guns.

1735 **Granger, J. M. F. L.**, 22 *Rue St. Appoline*—Manufacturer.

Specimens of hardware: locks of all kinds, padlocks.

1736 **Colin, Joseph**, 9 *Rue des Sulerges, Nantes*—Manufacturer. (Agent, A. Chauffourier, 9 *Sackville Street, Piccadilly.*)

Specimens of preserved food and pickles, game, fresh meat, vegetables, fruits, &c.

1737 **Goldenberg, Gustave, & Co.**, *Zornhoff, near Savern* (*Bas-Rhin*)—Manufacturers.

An assortment of hardware, edge-tools, flattened saws, files, steel, &c.

1738 **Zipelins, G. & Fuchs**, *Mülhausen*—Designers.

Design for a portiere, executed by Roussel, Requillart, and Chocquel.

1739 **Gregoire, Francois**, *Houbourdin, near Lille* (*Nord*)—Manufacturer. Agent Mr. C. Serin, 11 *Catherine Street, City.*

Three bottles of spirit of molasses, and vinegar from corn; the former now for the first time so distilled as to be available as a beverage, and used in the manufacture of alcoholic preparations, &c.

1740 **Mallet & Bailly**, *Rue de Rambuteau, Paris*—Artificial Florists.

Glass case, containing an artificial tree, representing the "weeping willow," and other emblems of mourning.

1741 **Krieger & Co.**, *Paris*—Manufacturers.

Various articles of ornamental furniture.

A richly carved book-case. This book-case is represented in the annexed Plate.

ALGIERS

Represented by Mr. Edmund Bouvy, Commissioner of Commercial Affairs for the Colony, and Delegate of the French Minister of War to the London Exhibition.

From this country an interesting group of objects, chiefly of raw materials and produce, is exhibited. Its natural resources are only just beginning to be opened up; and the promise of these, as may be in a degree estimated by the objects exhibited, is already important. The mineral wealth of this country would seem to be considerable, and when thoroughly rendered available, may prove a fertile source of prosperity. The copper, lead, and other ores shown, indicate a promising field for mining operations. A large quantity of grey copper ore appears to be on the point of exportation to England—probably to Swansea, for the purpose of being smelted. Some vegetable productions of interest and possible future value as textile materials, are shown in this collection. Medicinal substances and agricultural products are also fairly represented. A few textile productions and miscellaneous objects are likewise shown. The 'burnouses' of camels' hair will attract notice.—R.E.

1 **Andre, —**, Director of the Tobacco Service, *Algiers.*

Tobacco, in leaves, from the settlers of Sahel and Mitidja, and the natives of those districts.

Scaferlati tobacco.

Cigars made of Krachena tobacco.

2 **Arnaud, —**, *Bone* (*Constantine*)—Manufacturer.

Samples of white soap.

3 **Averseng & Co.**, *Toulouse*—Manufacturers.

"Vegetable hair," made of the leaves of the Algerian dwarf palm-tree, and adapted for the use of upholsterers, coachmakers, and other trades using the common horsehair. Patented for Algiers and France.

4 **Beauregard, —**, *Philippeville* (*Constantine*).

Iron ore of Mount Filfilah.

5 **Bedel**, *Arzew* (*Oran*)—Grantee.

Crystallized salt from the Salt Lake of Arzen, containing very considerable quantities of this produce, which is easily worked.

6 **Benes, Miss M.**, *Philippeville* (*Constantine*).

White cotton, called Naples cotton, gathered in 1850.

7 **Ben Zekri** (the wife of the Caïd), *Constantine.*

A silk and woollen haïck.

8 **Bernardon, H. A.**, a Soldier under confinement in the Military Prison of Bone (*Constantine*).

Aloes thread cloak, entirely the exhibitor's own workmanship.

9 **Borde, J.**, *Philippeville* (*Constantine*)—Manufacturer.

Fine oil of olives, crop 1850.

10 **Boulanger**, *Pierre Honoré*—Saddler.

Crapeau saddle, full quilted leather saddle-bow.

Bauche saddle, leather saddle-bow.
Short-ride saddle, saddle-bow, wooden band.
Child's saddle; a full-quilted velvet.
A bit upon a new principle.

11 Briqueler and Co., *Tenez*—Lessees.

Samples of copper pyrites from the Oued Allelah mines.

12 Cabanillas, Widow, *Saw-mill Works, Algiers.*

Five specimens of veneering, adapted for cabinet-work.

13 Cailliez, A. L. J., *Mustapha*—Cabinet-maker.

A toilet-table, and inlaid work-table, made of native wood.

14 Canton, —, President of the Chamber of Commerce, *Algiers*—Merchant.

Samples of Boucada and Medeah raw wool.
Three samples of Upper Chilif wool combed by machinery.

15 Casteiran, —, Colonist of the St. Louis Agricultural Colony (*Oran*).

Boiled yellow silk and white silk handkerchiefs, made of silks grown by the exhibitor in 1850.

16 Chapel, —, *Kouba:*

Farina from the canna-root (*Canna discolor*), a new article of food.

17 Chuffaut, —, *Birmandreis*—Agriculturist.

Hard and soft wheats, crop 1850.
Cotton, called Louisiane, crop 1850.
Silk in cocoons, and spun silk.

18 Commission of the Mouzaie Mines.

Crystallized grey copper ores. The Company is about to send over to England 2,000 tons of this ore, which are intended for smelting, and will probably be followed by more.

Sample of copper after the first smelting, produced from the ores of Mouzala, and sulphate of copper and sulphate of iron, the product of the same ores, in the factory of Caronte, near Marseille.

[In the case of English ores of other metals, it is the common practice, in order to save the expense of carriage, to smelt them close to the spot where they are raised. Copper ores, however, are generally raised in places where fuel is scarce. Swansea possesses abundance of coal, and a commodious and safe harbour; so that the ores of the numerous mines of Cornwall, Devonshire, Wales, Ireland, and the Isle of Man, can be sent at a very easy rate to Swansea to be smelted; and the vessels which convey the ore return ballasted with Welsh coal, for feeding the numerous steam-engines of the mining districts. During the last twenty years, Swansea has also been supplied with copper ore from the shores of Europe, from Cuba, Mexico, Columbia, Peru, Chili, Australia, and New Zealand, and, in the present instance, a new source is opened.

Some of these foreign ores, consisting chiefly of the carbonate and red oxide, are very rich in copper; but by far the most abundant is copper pyrites, consisting chiefly of the sulphuret of copper, combined with the sulphuret of iron. No less than ten distinct processes are concerned in the reduction of the poorer ores. They are calcined in reverberatory furnaces, by which a considerable portion of the sulphuret of iron is converted into an oxide, while the sulphuret of copper remains unchanged. The calcined ore is strongly heated with siliceous sand, which unites with the oxide of iron, and forms a vitreous scoria, or slag; which, being skimmed off, leaves the heavier copper compound behind. By repeating these processes, the iron, and other metallic impurities, are got rid of in the slag; the sulphuret of copper is then decomposed by heat, and converted into an oxide; and lastly, the oxide is reduced, with the assistance of carbonaceous matter and a very high temperature.

The management of the fuel in the reverberatory furnaces is interesting. These are of large size, being upwards of 20 feet long, and are so contrived that the flame of the fuel shall be reflected down upon the sole of the furnace, over which the ore is spread in a layer of a few inches in thickness. But as the anthracite, or Welsh stone coal, produces scarcely any flame, some contrivance was necessary, to apply to the useful purposes of the copper smelter the immense stores of this mineral fuel with which South Wales is supplied. When anthracite is raised to a very high temperature, it forms a vitreous scoria, or *clinker*, which, in the ordinary form of furnace, occasions great loss and embarrassment, by choking up the bars of the grate, and, combining with the iron of the bars, leads to their rapid destruction. In the Welsh furnaces, these clinkers are made to perform the office of the bottom bars of an ordinary furnace, supporting the fuel, and limiting the supply of air. The clinkers themselves are supported on iron bars, placed at considerable distances apart; these do not perform the usual office of grate-bars, but serve merely as supports for the clinkers which are piled upon them, so as to form a layer from 12 to 16 inches thick. Above this support, the fuel is in full combustion, and forms the hottest part of the fire; and here it is that fresh clinkers are being continually formed, and in the act of formation they cake with the numerous fragments of small coal heaped up above them. As this new clinker forms, it gradually descends towards the bottom of the fire, and, becoming chilled by the rapid current of ascending air which supports the combustion, splits and cracks into numerous fragments. In this way, new channels are formed, sufficiently large to admit the ascending air in powerful jets, which urge on the combustion, but not large enough to allow the small coal to fall out and escape. The calciner man, who has charge of the operation of calcining the ore, disengages a few of the bottom clinkers as they accumulate, so as to preserve certain relative proportions between the different parts of the fuel, which have been found by experience to be best adapted to the successful working of the fire.

The anthracite is mixed with about one-fourth of its weight of small bituminous coal, which, caking therewith, and swelling up by the heat, preserves in the mass the requisite degree of porosity. The layer of anthracite above the supporting clinkers is about 12 inches thick. The air traverses this layer through a multitude of channels, formed by the cracks in the clinkers, and the heated products of the combustion stream through the furnace. Under ordinary circumstances, the carbon of fuel under combustion is converted into carbonic acid, which is an uninflammable gas, and prevents the combustion of other bodies. By the above arrangement, however, the carbonic acid which is formed by the combustion of the fuel is deprived of a proportion of its oxygen, and is converted into the inflammable gas, carbonic oxide, before, or just as it escapes from the fire into the vault of the furnace. But its inflammable property would not, under ordinary circumstances, be displayed here, for it is accompanied by nitrogen, which will not support combustion; and the sulphuretted and arseniuretted hydrogen gases, liberated by the calcining ore, being combustible themselves, will not support combustion. In order, therefore, to enable the carbonic oxide to burn, it is necessary to supply it with a supporter of combustion, such as the oxygen of the atmosphere; and for this purpose an opening is made in the wall of the furnace, just above the ore, and each of the four furnace doors is furnished with a small hole. Through these apertures the air streams in with considerable force, depending, of course, upon the draught of the chimney, and supplying oxygen to the carbonic oxide, ignites it, and thus the whole surface of the ore is played upon by a thin sheet of flame, which burns only on its under surface, because its upper surface, or that of the carbonic oxide which supplies fuel to the flame, is in contact with gases which do not support combustion. In this way the calcination proceeds, and all the gaseous products thereof, and of the fire, are at length discharged through a chamber, or flue, into a tall chimney, and thence into the external air.—C. T.]

19 AIN MORKA MINES COMPANY, *Constantine.*

Steel, manufactured in France, from the iron ores of Ain Morka.

Assortment of files, manufactured in France, from the same ores.

Set of scythes, made of cast and refined steel, from the same.

20 BONE MINES AND IRON WORKS COMPANY, *Constantine.*

Specimens of raw steel castings and of cast steel.

21 CONVERSO, —, *Bone, Constantine.*

Writing-desk, in marquetrie, made of native wood.

22 CURTET, —, jun., *Bab-el-Oued*—Manufacturer.

Samples of olive oil, oils of sesamum, mustard, cotton, brassica arvensis, ricinus, poppies, turnsol, &c.

23 DUPRE DE ST. MAUR, *Orbal, Oran*—Agriculturist.

Specimens of soft wheat, tobacco leaves, jumel cotton, wool, and madder roots.

24 FLECHY, J. B., *Algiers*—Manufacturer.

Paper and pasteboard, made of the dwarf palm-tree (*Chamœrops humilis*) leaves, by patent process.

25 FRÉDÉRIC, JEAN BAPTISTE, *Montpensier, Algiers*—Agriculturist.

Sample of opium. White poppy capsules, of the crop 1850.

26 GRIMA, FRANCOIS, *Philippeville, Constantine*—Agriculturist.

White and nankeen, from cottons of the crop 1850.

27 HALOCHE, —, *Drariah, Algiers*—Agriculturist.

Cotton, of the crop of 1850.

28 HARDY, —, Manager of the Hamma Nursery, *near Algiers.*

Jamel, Louisiana, New York, and Georgia cottons.
Macedonia and nankeen cottons, crops of 1849 and 1850.
Raw silks, of 1849 and 1850.
Cochineal, opium, dry rice, and oleaginous seeds.
Varieties of maize.
Bamboo canes of eight and six months' growth.

[The cotton, tobacco, silk, wool, and cochineal of this colony are well worthy of notice. The specimens of red coral come from the great coral fisheries of La Calle, the principal source of that precious product of the Mediterranean Sea. It is the stem of an anthozooid zoophyte.]

29 JEANTET, —, *Constantine*—Agriculturist.

Hard wheat and barley, of the crop 1850.

30 MOHA, JUDAS, *Oran*—Manufacturer.

Two gold embroidered silk dresses, for Jewish ladies.

31 JULIEN, —, *Bougie, Constantine*—Manufacturer of Preserves.

Pickled olives.

32 LAYA & Co., *Minoters, Algiers.*

Sample of native wheat flour.

33 LEPELLETIER, —, *Fondouck, Algiers*—Agriculturist.

Soft wheat, crop of 1850.

34 DE LUTZOW, —, *Bone, Constantine*—Colonist.

Sample of saffron.

35 MAFFRE, ETIENNE FÉLIX, *Bougie, Constantine*—Manufacturer.

Fine olive oil.

36 MARCHAL, —, *Boudjaréah, Algiers*—Agriculturist.

Soft wheat and brown oats, crop of 1850.

37 MERCEURIN, HENRY JOSEPH, *Cheragas, Algiers.*

Olive oil of 1850.

38 MONTIGNY, GASTON DE, *St. Joseph, Oran*—Agriculturist.

Soft wheat and barley, crop of 1850.
Madder root. Saffron.

39 MORIN, —, *El Biar, Algiers*—Agriculturist.

Tobacco in leaves, called Philippin. Cut tobacco. Cigars.

Jumel cotton, crop of 1850. Silk in cocoons, and spun silk.

40 OXÉDA & AQUI, *Algiers*—Cigar Manufacturers.

Samples of cigars of various qualities.

41 FISHERIES OF LA CALLE, *Constantine.*

Red coral; branches preserved in alcohol.
Raw coral; branches in their natural state.
Red chalkstone, extracted seven or eight years ago.

42 PELISSIER, CALIXTE, *Kaddous, Algiers*—Agriculturist.

Specimens of white cotton.

43 PIGLIA, JOSEPH, *Constantine*—Agriculturist.

Specimen of madder-root.

44 REVERCHON, HIPPOLYTE, *Birkadem*—Agriculturist.

Tobacco in leaves, and Jumel cotton, crop of 1850.

45 COMMISSION OF THE MINES OF ALGIERS, *Province of Algiers.*

Samples of various ores in the unwrought state.
Native copper and grey crystallized copper of Medeah.
Crystallized grey copper of Moujaia and Oued Allalah.

Copper pyrites of Oued Allalah, Merdja, Boukandas, Keber, Aidoussa, Zaccar, Mouzaia Nickel.

Argentiferous lead of Pescada Point.

Ologistic iron of Sidi El Medani.

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46 Commission of the Mines, *Bone, Constantine.*

Samples of ores:—

El Mellaha and Ain Barbar pyritous brass.

Carbonate of copper of Oum Thebul.

Copper mixed with zinc of Ain Barbar.

Oxide of antimony and Taya cinnabar.

Sulphuret of antimony of Taya and Seusa, and of Ghelma.

Bright and dull galena (lead ore) of Oum Thebaul.

Antimonial galena of Djebel Cheggaia.

Magnetic iron of Saf Saf.

Ologistic iron of Mount Filfilah.

Oxidate of iron of Filfilah, El M'Kmoun, Oued El Kjob, Ain Chougga, Bonhamra, Mekla, El Hadid, Ain Marabout, Betlielea, and Meboudja.

White marble of Mount Filfilah.

Lignite of Smeudou.

[This collection presents a favourable picture of the mineral and metallurgical resources of this recently-established colony. Copper appears to be found in considerable abundance, and is accompanied by zinc. The specimens of lead, iron, and antimonial ores indicate also the existence of sources of these metals which may ultimately become valuable. If the lignite exhibited is adapted for fuel, it will not prove the least important.—R. E.]

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47 Commission of Woods and Forests, *Algeria.*

Collection of native wood, such as cedar, oak, cork-tree, cedar-leaved juniper, jujube-tree, caroba-tree, wild olive, arbutus, sumac, turpentine-tree, lentisk, cypress woods, &c.

Samples of cork of the Lacalle and Edough forests.

Tanners' bark.

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48 Si-Amed-El-Hachemi, of the Amer Cheragas Tribe, *Province of Constantine.*

A hambel, a species of woollen blanket or carpet.

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49 Si-Amar-Smin (his wife), *Province of Constantine.*

Sample of hand-spun wool.

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50 Si-El-Bey Ben-Bou-Ras, *Constantine*—Manufacturer.

Arab saddle, with gold and silver embroidered morocco covering, and every appendage forming an Arab horseman's equipment.

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51 Simounet, Pierre, *Algiers*—Manufacturer.

Perfumed essences of jasmine, geranium, &c.

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52 Soual, —, *Bone, Constantine*—Edge-tool Maker.

An iron axe.

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53 Tribe of the Bene Abbes, *Province of Constantine.*

A white abessi burnous.

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54 Tribe of the Bou Taleb, *Province of Constantine.*

A haïck boutalbi.

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55 Tribe of the Dribes, *Province of Constantine.*

Woollen burnous.

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56 Tribe of the Haractas, *Province of Constantine.*

Specimen of raw wool. Two large woollen carpets. A woollen blanket.

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57 Verrier, Ferdinand, *Algiers*—Manufacturer of Preserves.

Sardines preserved in oil.

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58 The Delegate of Algiers.

Spun cottons:—

Cotton yarn and twist; various samples, from Nos. 200 to 400; spun by Edmund, Cox, and Co., à la Louvière-Lez-Lille, with long staple cotton from Algeria, called Georgian, crop 1850.

Silks:—

Piece of figured lampas, in Algerian silk, crop of 1850, manufactured at Lyons.

Piece of glazed taffetas, in rose and white silk, likewise in Algerian silk, manufactured at Lyons.

Sample of gauze armure taffetas, in Algerian silk.

Various Algerian fabrics.

Woollens:—

Large woollen carpet, manufactured by the Arabs of the province of Constantine.

Large carpet (long wool), manufactured in the neighbourhood of Marcara, province of Oran.

Mat of wool and esparto, from Sidi Bel Abbès.

Six carpets, of different sizes and hues, of indigenous manufacture.

Small carpet, manufactured at Mascara, province of Oran.

Blanket, with red ramage. Blanket, with yellow and green ramage. Roll of woollen tissues, for cells in Arabs' tents. Belt, in red wool. Burnous, with red stripes. Burnous justi, white. Burnous of Gerbis. Bournous Djeridi.

Sack, striped red and green; and another, with black and brown stripes.

Haïck, in white cotton and wool; and another in wool.

New scarf.

Various articles of indigenous silvermiths' work.

Various articles:—

Five hats, of cotton felt, manufactured in Algeria, with and without hair; manufactured by Messrs. Ernoux-Diolo, at Paris.

Three samples of the first attempts at felting made by this manufacturer with Algerian cotton.

Sample of paper manufactured in France with aloes tow and Algerian banana-tree.

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59 Baruch Toledano, *Oran*—Embroiderer.

Petticoat of silk, embroidered with gold, for a Jewess.

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60 Cherif Ben Mimoun, Spinner of the tribe of Beni Abbes, *Constantine.*

White abessi mzouak burnous.

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61 Caid Ben Zekie des Seignas (the wife of), *Constantine.*

Gandoura, made of wool and silk.

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62 Mohamed Ben Achir (Caïd of Mascara), *Oran.*

Burnous, in black wool.

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63 Saad Ben Bartha, *Bone, Constantine.*

Basket, made with the leaves of the palm-tree, mixed with woollen.

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64 Si Hamon Bel Onataf, *Zamenoua, Constantine*—Spinner.

Burnous, made with camel's hair.

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65 Si Ali Bel Lamouchi, *Constantine*—Merchant.

Zamouiri burnous, with red stripes.

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66 Si El Medani (tribe of the Ouled Taben of Bon Taleb), *Constantine*—Spinner.

67 TRIBE OF THE BENI SNOUS, *Oran.*

Mat, made of the bark of a palm-tree, mixed with wool.

68 COX, E., & CO., *Louvière-lez-Lille*—Spinners.

Cotton spun with the cotton of 1850.

Series of samples from Nos. 200 to 360, single thread; and No. 400, double thread.

1663 MOHAMED BEN SALAH, *Beni Abès, Province of Constantine*—Weaver.

A white abessi Mouzaiah burnous.

1694 SI AMON BEN OUAT, A. F., *Zamoura, Province of Constantine*—Weaver.

A zamouri burnous.

1695 SI ALI BEN LAMOUCHI, *Constantine.*

A burnous zamouri.

1696 SI HAMIDA, *Muphti of Oran.*

A woollen common caban.

1560 MIMON, CHERIF BEN, *Beni Abès, Constantine*—Weaver.

A white abessi burnous.

SWITZERLAND

South Area, L. M. 43 to 45; N. 44, 45; O. P. 43 to 45; Q. R. 44, 45; S. 44.
South East Central Gallery, M. 41, 42.

Commissioners in London, Professor Bolleyavau, K. Eichholzer, *St. Gall;* Professor D. Colladon, *Geneva.*

Switzerland is a federal State composed of twenty-two cantons, which, till 1847, formed independent and distinctive States, possessing a commercial tariff and customs of their own. In 1850 these cantons submitted to a systematic tariff of customs, equally enjoyed by the whole of the confederation: these tariffs are at present undergoing some modifications. The statistical importation and exportation tables of Switzerland, compared with other countries, are extremely uncertain, and in the present introduction and subsequent notes we are frequently compelled to confine ourselves to simple and general facts.* Since the 1st of January 1851, Switzerland has adopted an uniform currency, which is called the federal franc, of the same value and the same subdivisions as the franc of France. They are at present giving their attention to an uniform system of weights and measures, and it is very probable that analogous decimal measures to those of France, Belgium, and Lombardy, will before long be adopted. The quintal is equivalent to 50 kilogrammes, or about 110 lbs. avoirdupois.

Switzerland possesses many metallurgical mines, of which only a very small number are worked. Many have been abandoned, owing to the produce of the metals not paying the expenses of working them. Mines are still worked with some advantage yielding the following metals: iron, copper, nickel, cobalt, argentiferous lead and zinc; but not in sufficient quantity for home consumption.

Berne, Soleure, Schaffhausen, St. Gall, Grisons, and Valais, are the principal cantons that produce iron. The iron produced at Berne has a high reputation for its tenacity, malleability, and resistance to fire. During the reign of Napoleon Bonaparte the iron of this canton was much used for the manufacture of gun-barrels.

The manufacture of wire is also of importance, and the celebrated suspension bridge of Fribourg, with a single span of nearly 900 feet, was made of the wire of the Bernese Jura. The canton of Schaffhausen is celebrated for the excellence of its cast and wrought steel, easily distinguished from the other kinds. The canton of Valais possesses many rich beds of iron, which is exported to St. Etienne in France, where it is manufactured into cast steel. The importations of cast and manufactured iron, zinc, copper, tin, lead, &c., are considerable. These metals come from England, Belgium, France, and various States of Germany, &c.

Switzerland possesses many salt-mines or saline springs; the most important are those of Bâle-Campagne, Vaud, and Argovie. These mines do not suffice for above half the demand.

There are but few coal-mines, and these of little value; coals are imported from France. The canton of Neufchâtel possesses some bituminous lime mines, from which they extract asphalte, and export in small quantities.

Beds of slate, gypsum, numerous varieties of marble, and various minerals, are likewise to be found in this country.

Switzerland has a considerable number of manufactories of earthenware, the produce of which is largely exported from the cantons of Zurich, Berne, and Schaffhausen. The potteries of Winterthour and Schaffhausen are justly celebrated for the beauty and variety of their productions. China, and the finer kinds of earthenware, are manufactured at Vaud, Geneva, and Argovie. The finer earthenware and china is imported from Germany, France, and England.

Switzerland possesses in abundance clay for the manufacture of bricks and tiles, the demand for which, however, is very limited, owing to the low price of stone, slate, and wood. There are about fifteen glass factories, which are employed principally in the manufacture of bottles and glass for windows; the annual importation of glass and crystal is about 20,000 quintals of 50 kilogrammes. Common glass is imported from the Duchy of Baden and Savoy, the finer kinds from France, Bavaria, Bohemia, and England.

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* For further information, "Statistique de la Suisse," by M. S. Franscini, and the works of Dr. de Gonzenbach, may be consulted.

The canton of Soleure is celebrated for its manufactory of flint and crown glass for optical instruments, the superiority of which is so universally esteemed as to be much sought after by the most eminent opticians of Europe and America.

The principal chemical manufactories are those of the cantons of Zurich, Berne, Soleure, Bâle, Glaris, and Argovie; the supply, however, is not equal to the demand, and the annual importation from other countries is about 60,000 quintals.

The vine is cultivated in all the cantons, with the exception of Uri, Unterwald, and Glaris.

Several of the cantons have large manufactories of soap, and nearly all manufacture candles; the tallow is imported from Russia. France sends to Switzerland about 30,000 quintals of soap annually.

Switzerland is extremely rich in cattle and other animals. There are about 850,000 oxen and cattle, 500,000 sheep, 350,000 goats, &c., for which her rich pastures and numerous forests are well suited. Although this country is most favourably adapted for the extension of tanneries, this art is not largely or successfully pursued. The enormous duties on the importation of leather into France, and some of the States of Germany, has had an extremely prejudicial effect on this important branch of commerce; but the present facilities for transport is likely before long to render this trade one of the most considerable and valuable of the country. Her exports are, however, considerable in the skins of oxen, cows, sheep, and goats, tanned and untanned. The exportation to France alone exceeds 800,000 kilogrammes annually. The large skins are held in great estimation for their solidity and durability, and are much sought after for the manufacture of the soles of shoes. A considerable foreign trade is likewise carried on in calf-skins, which is much used by the bootmakers. In the north and west of Switzerland are a few manufacturers of chamois leather, morocco, and varnished leather.

Switzerland is also rich in the number of her forests, and the wood that grows in the more elevated portions of the country is highly esteemed for building purposes, much of which is exported into France, Algeria, and Germany. In many of the mountainous districts, and particularly in the Bernese Oberland, the artisans carry on a considerable trade in carved wood, such as furniture, fancy articles, &c., a few of which are exported. Her manufactories in wooden agricultural implements have arrived at a very high state of perfection in many of the cantons. Of these various specimens are shown.

The breeding and care of cattle is one of the most ancient pursuits of the Swiss. The rich pastures of the Alps, the purity of the air and water, give that superiority to the Swiss cattle, which they even preserve abroad. It is a remarkable fact, that even the cows sent into a warm climate preserve the property of giving a superior quantity and quality of milk; the consequence is, that above 15,000 oxen and cows, as well as 20,000 calves, are annually exported to the south of Europe and Algeria.

The Swiss export a considerable quantity of cattle to France. Their breed of horses are noted for their strength and great power of endurance; they export from 5,000 to 6,000 annually, as well as about 20,000 sheep. The cow-bells and agricultural implements exhibited suggest these facts.

The Swiss cheese enjoys a deservedly high reputation, due to the breed of cattle and the perfumed pastures of the high Alps. They export largely into almost every country. The cheeses of Gruyère, Emmenthal, and Schabzieger, are held in high esteem, and keep for many years.

Nine only of the twenty-two cantons of Switzerland produce the cereals in sufficient quantity for their own consumption; these are—Lucerne, Fribourg, Soleure, Schaffhausen, Berne, Argovie, and Vaud. A considerable quantity of corn, maize, and rice, is imported into Switzerland, principally from Germany and Lombardy. For remarks on the manufactured articles exhibited, reference will now be made to their proper places.—D. C.

1 NEUHAUS and BLÖSCH, *Bienne*—Manufacturers.

Iron wire, for making cards for the purpose of carding wool and cotton, for watch springs, and other purposes.

Iron-ore and metal, the production of mines situated in the canton of Berne. The specimens are cast and forged in the same district.

2 SUCHARD, PHILLIP, *Neuchâtel*—Inventor and Manufacturer.

Specimens of fine chocolate; ditto à la Vanille; small boxes, samples of the same.

3 KEIGEL, FREDERIC AUGUSTE, *Couvet, Canton of Neuchâtel*—Inventor and Manufacturer.

A pivot-tool for rolling and finishing pivots, with cylinder and screws, set in sapphire and used to make the corner or cylinder-pivots.

A cylinder set in sapphire, connected with the pivot-tool, arranged to finish the cylinder pivots. The advantages are, that the notches do not wear out, and are not subject to decomposition. Steel cylinder with 3 notches, to finish the seconds pivots. Steel ditto with 12 notches, 12 corresponding holes for finishing and shortening the pivots.

Depthening tool, in three parts. This tool is principally intended for lever escapement makers.

A turning apparatus for finishing pivots (old style). Another, for finishing the pivots for clocks, &c. A cylinder connected with the same.

A common depthening tool. A gauge for taking the size of the pivots.

4 ERBEAU, JULES, *Travers, Canton of Neuchâtel*—Manufacturer.

A universal turn plate of 4½ inches, fixed graver with 5 motions, rest 12 gravers, two sets of dogs, upright with two cylinders, one to plant and one to drill, a sinking tool frame, 6 sinkers; the plate is supplied with clasps, and extra clasps for jewelling.

A pivoting turn plate, assorted with 12 notches, 12 lanterns, notches for seconds, pivots, and gauge.

A depthening tool, 2·3 inches. An upright tool.

5 JEANNET, FREDERIC, *Locle, Canton of Neuchâtel*—Manufacturer.

A rifle, with the customary appendages, steel barrel, for conical bullets; the name, Fritz Dehn, is on the barrel.

6 BANDELIER, PIERRE FREDERIC, *Locle, Canton of Neuchâtel*—Inventor.

Four springs, two of them for going fusee, viz., for patent lever watches, and two for *l'épine* movements.

7 **Iunod Brothers**, *Chauxdefonds, Canton of Neuchâtel*—Manufacturers.

A repeater watch, size 1·7 inches, gold case and dome striking the hours, quarters, and minutes, duplex escapement pallet, roller, and 24 rubies, compensation balance, Breguet pendulum spring, engine-turned case with a subject in the centre.

8 **Grandjean, Henry**, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

Pocket chronometer, gold hunting engine-turned case, ¾-plate movement 1·6 inches going fusee, detached escapement, spherical pendulum spring, and adjusted at a temperature of −12° to 15° to +25° to 30° Reaumur.

Pocket chronometer, gold hunting case, 1·6 inches, cap movements, going, barrel lever escapement à Bascule.

Gold hunting watch, engraved, 1·7 inches, style of regulator with duplex escapement, fixed seconds.

Gold watch, engraved historical subject, cap movements, 1·6 inches, lever escapement, independent seconds with one set of wheels, excentric running seconds, regulated in every position at a moderate temperature.

Gold watch, engraved historical subject, 1·6 inches, double dials independent, with one set of wheels.

Gold watch, 1·6 inches, going eight days, two barrels, lever escapement, and regulated in all positions.

9 **Dubois, F. Williams**, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

An astronomical clock, lever escapement, on a new principle, which is claimed to be to the clock what Arnold's escapement is to the watch, compared with other escapements. The pendulum consists of five large and two small rods of steel and composition, arranged on a new principle, to obtain easily the highest degree of precision in the compensation of the pendulum.

[Its variation in length is less than $\frac{1}{10000}$th of an inch for a change of temperature of 45° of Fahrenheit's scale. It is suspended on a knife-edge of very hard bronze. It needs winding once only in thirty-five days. The weight of the pendulum is nearly 35 lbs.—J. G.]

A marine chronometer, on a new calibre.

10 **Favre Auguste, Edward**, *Locle, Canton of Neuchâtel*—Manufacturer.

A pocket chronometer, Tourbillon escapement, with thermometer.

11 **Favre Brandt, Auguste**, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

Instrument for determining the epicycloidal curve of the teeth of wheels and pinions in watchmaking.

12 **Vuilleumier, De la Reusille**, *Tramelan, Canton of Berne*—Manufacturer.

A repeating watch and clock, striking regularly or at will. Cylinder escapement, 8 holes jewelled in rubies, new calibre, gold dome and dial, with engraving.

An eight-day watch, fine cylinder escapement, 8 holes jewelled in rubies, showing the days of the week and of the month, gold case and dome, engraving of the days of the week.

A watch with independent seconds, lever escapement, visible pallets, 20 holes jewelled in rubies, gold case and dome, with engraving.

Two small ladies' watches, cylinder escapements, 8 holes jewelled in rubies, gold cases and domes, with engravings.

A watch in an unfinished state, repeating and striking at will, lever escapement, visible pallets, with compensation and parachute.

13 **Bovet, Fritz**, *Waldenbourg, Canton of Bâle*—Inventor.

A watch, going for one year without winding, gold case, dial and dome, cylinder escapement, 16 holes jewelled in rubies. The movement calibre of the watch made and invented by the exhibitor. The diameter of the movement is 2 inches, and the depth $\frac{4}{9}$ inch; on the dial is an engraving of the island of St. Peter.

A gold watch, *l'épine* movement, enamel dial with seconds, straight line, lever escapement, visible pallets, 15 holes, and the pallets in rubies. Size of the watch 1½ inches diameter, and depth ¼ inch.

14 **Rauss & Colomb**, *Chauxdefonds, Canton of Neuchâtel*—Manufacturers.

A gold engine-turned watch, chronometer escapement, 12 holes jewelled in rubies, six ruby end pieces, enamel dial with sunk seconds.

A similar watch with engraved back.

15 **Mermod Brothers**, *Sainte Croix, Canton of Vaud*—Manufacturers.

A gold watch, size about 1 inch, cylinder escapement, 9 holes jewelled in rubies, to wind up by the pendant, the case ornamented with diamonds on a royal-blue enamel back.

Gold watch, to go eight days without winding, cylinder escapement, size 1·7 inches, 8 holes jewelled in rubies.

Gold watch, size 1·6 inches, lever escapement, straight line, 3 pallets and 14 jewels, the case ornamented with a lion in black enamel, on a sky-blue enamel back.

A chronometer, gold case, detached escapement after Arnold, size about 1¾ inches, 14 jewels and 3 pallets, compensation balance.

A gold watch, marking the days of the month, lever escapement, 22 holes jewelled, compensation balance, size 1·7 inches, the arms of England engraved on the case.

Gold watch, size 1·15 inches, cylinder escapement, 8 holes jewelled in rubies. The case forming at will, three distinct watches, viz. a hunting case, a centrical watch, and a lady's watch, royal blue enamelled back, with picture.

[The manufacture of watches is one of the three principal branches of Helvetian commerce; it is not general, but confined particularly to the cantons of Geneva, Neuchâtel, Vaud, part of the Bernese Jura, and the Canton of Bâle. This department of industry has never prospered in any of the other cantons, and is at present entirely abandoned.

This fact is entirely owing to local circumstances, and the prosperity of the trade has steadily and gradually increased, independent either of protective duties or Government patronage, whilst in other countries this manufacture, supported by Government, and an immense outlay of capital, has hitherto never succeeded.

The principal circumstances which have contributed to its development in the Cantons of Geneva and Neuchâtel, have been the abundance of capital, the low interest of money, cheap labour, and the absence of other trades; the general instruction of the population, with a natural aptitude and taste for fine and delicate work, combined with a love for commerce, and finally the inclement and severe winter of the valleys of the Jura,* and the natural love of order, patience, and industry of the inhabitants.

The division of labour in this department are so numerous, that the movement of a watch, the value of 1*s*., will frequently pass through more than sixty hands.

The Cantons of Geneva, Neuchâtel, Vaud, and Bernese Jura, are calculated to manufacture two-thirds of the watches in the world; the total annual estimation of which is about 1,200,000.—D. C.]

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* The thermometer often descends 15° Fahrenheit below zero, or 26° Ther. Centigrade.

16 Dely, Meroz, *Sonvilliers, Canton of Berne*—Manufacturer.

A gold hunting watch, gold dome, lever escapement, compensation balance, 10 holes jewelled in rubies, Breguet pendulum spring, visible pallets.

A gold watch, gold dome, lever escapement, compensation balance, 10 holes jewelled in rubies, Breguet pendulum spring, covered pallets.

17 Kopp, Henri F. J., *Travers, Canton of Neuchâtel*—Manufacturer.

A repeating watch, with dead or independent seconds, with one train of wheels only, the mechanism of the seconds jewelled in rubies, Breguet movement (with keys), ruby cylinder escapement, compensation balance, 14 holes jewelled in rubies, gold case 18 karats, silver dial, with an enamel dial for change, enclosed in a shell box.

18 Perret, Augustin, *Brenets, Canton of Neuchâtel*—Inventor and Proprietor.

Improved pocket clock and independent repeater, striking the hours, quarters, and minutes. The hands can be moved backwards or forwards, in every position of the watch. The striking and repeating works can go together, so that they may not be put out of order by turning the hands or making the watch strike.

19 Borel, Henri Justin, *Chauxdefonds, Canton of Neuchâtel*—Manufacturer.

Two travelling clocks, called imperials, going eight days with great and small chimes and stop, repeater, alarm, days of the month, excentric with seconds, chronometer escapement, compensation balance.

20 Moser, Francis, jun., *Bienne, Canton of Berne*—Manufacturer.

A gold watch, hunting case, gold dome, silver gilt dial, straight line lever escapement, full plates, 1·6 inches, ten holes in rubies, frame engraved.

21 Perret, David, & Son, *Locle, Canton of Neuchâtel*—Manufacturers.

A silver hunting watch, metal dome, size 1·7 inches, enamel dial, with sunk seconds, lever escapement.

A watch similar to the preceding, but with open face and glass.

A gold open-face watch, gold dome, gold dial, with solid figures, size nineteen lines, lever escapement; weight of the case 17 dwts.

A watch, similar to the preceding, with metal dome, gilt silver dial, solid gold figures.

A gold hunting watch, gold dome, solid figures, size 1·7 inches, lever escapement; weight of case 1 oz. 5 dwts.

A watch similar to the preceding, with metal dome, gilt silver dial, gold raised figures; weight of case 1 oz.

[The more expensive and finer kind of watches are manufactured at Geneva, as well as a great number of chronometers. Watch-cases are principally made in this town, and it is calculated that more than 600 chasers are employed in this department, as well as a considerable number of enamel-painters. The small watches which are mounted in bracelets, rings, &c., are made in this town. Marine-chronometers are executed according to order.

The watch-trade of the Canton of Neuchâtel, is centred principally in the small towns of Locle and Chauxdefonds, situated in the middle of the valleys of the Jura. The whole of the valleys surrounding these two towns are entirely inhabited by watchmakers and their families; the greater number work in "companionship" (*parties brisées*).

These valleys contain six extensive factories for the manufacture of unfinished movements, as well as a number of workshops for watch-wheels, pinions, escapements, compensating balances, watch-cases, springs, &c.; all these articles are minutely and carefully inspected by the principal manufacturers, before being exported. Although the greater part of the watch-manufacturers of the Cantons of Neuchâtel, Berne, and Vaud, are more especially engaged in the manufacture of cheap and inferior watches, there are still some of the larger firms, who employ many eminent workmen in the construction of pocket and marine chronometers, as well as astronomical watches. These three cantons, as well as that of Geneva, contain numerous factories, exclusively employed in the construction of machines and instruments employed in this trade, and in the manufacture of articles connected with it, such as dials, watch-hands, springs, keys, watch-jewels, &c.

There are but few houses engaged in the manufacture of clocks, the trade of which is extremely limited.

Many of the cantons, especially Geneva, Zurich, Berne, and Bâle, possess several factories of jewellery, more particular for the home supply, there being only a small exportation for Italy and Germany. This trade is of some importance at Geneva, which possesses several considerable factories, which export largely.—D. C.]

22 Audemars, Louis, *Brassus, Canton of Vaud*—Manufacturer.

A watch with two dials, independent seconds, Breguet escapement, short fork, with compensation balance, showing the phases of the moon, days of the week and month, seconds, and fifth of seconds.

A clock watch, striking the hours and the quarters, winding and hands set by the pendant, Breguet escapement, short fork, compensation balance.

A repeating watch, independent seconds, duplex escapement, compensation balance.

A minute repeating watch, Breguet escapement, short fork, compensation balance.

A pocket chronometer.

A watch, half plate, Robin escapement, double rest, compensation balance.

A watch, detached escapement, Bascule, compensation balance.

A watch, Paris calibre, Breguet escapement, short fork, compensation balance.

A repeating watch, cylinder escapement.

A hunting watch, winding and regulating by the pendant, the winding part being after the system of the Breguet key, duplex compensation balance.

An open-faced watch, same as last, but with cylinder escapement and common balance.

A pistol, composed of twenty pieces, acting perfectly, and weighing only half a grain.

23 Favre, Henri Auguste, *Locle, Canton of Neuchâtel*—Inventor and Manufacturer.

A pocket chronometer, Tourbillon escapement, in gold hunting-case, size one inch and seven-tenths.

A pocket chronometer, furnished with an isochronous pendulum spring and fancy calibre.

A chronograph for taking, to a fifth part of a second, the time of observations. By pressing the knob the point marks itself on the dial, and the hand continues going. The second hand, showing the fifth of a second, being independent of the movement, stops at will, without altering the motion of the watch. In order to cause the hand to make a mark on the dial, it is sufficient to press the small knob placed near the pendant, and the mark or point is made without slackening the hand: 300 such observations can be made in one minute. The ancient chronographs had two movements: the mechanism of this has one only, which is much simplified, and is furnished with Breguet spring, lever escapement, visible pallets, and is in a gold hunting-case.

24 **Grosclaude, Charles Henri,** *Fleurier, Canton of Neuchâtel*—Inventor and Manufacturer.

An open-faced watch, with gold case and dome, engine-turned case, enamel dial, gold hands, straight line lever escapement, twenty holes, six top-holes and three pallets jewelled in rubies, compensated balance, independent seconds, two dials, and quarter-seconds. The hands of the right dial can be stopped at will by the bolt nearest to the pendant; the centre seconds and the quarter-seconds can be stopped by the bolt nearest to the hour-mark, six. This watch has only one barrel.

An open-faced watch, with gold case and dome, engine-turned back, enamel dial, gold hands, straight line lever-escapement, twenty holes, eight top holes and three pallets jewelled in rubies, compensated balance, independent seconds, two dials, and running seconds from the centre. The hands of the right-hand dial can be stopped at will by the bolt nearest to the pendant; the independent seconds can be stopped at will by the bottom bolt; the running seconds continue to move with the left dial. This watch has only one barrel.

25 **Lecoultre, Antoine,** *Sentier, Canton of Vaud*—Inventor and Manufacturer.

A pocket chronometer, gold case, straight line lever-escapement, short fork, compensation balance, coudé pendulum spring.

Pocket chronometer, straight line lever-escapement, short fork, compensation balance, coudé pendulum-spring, to wind up by the pendant.

Pocket chronometer, detached escapement, coudé pendulum-spring, compensation balance, having double stop on the balance to prevent the tripping, to which that kind of escapement is subject when shaken.

Pocket chronometer, silver case, with duplex escapement, maintaining power, compensation balance, flat pendulum spring.

A three-quarter plate movement, going, in a rough state, chronometer escapement, coudé pendulum spring, to wind up by the pendant.

Six movements, without escapement, with this peculiarity, that after being taken to pieces, and the pieces mixed, they can be placed together again, taking each piece as it presents itself, with the exception of the barrels and indexes and the screws.

An assortment of pinions, produced by a peculiar machine.

26 **E. & A. Paillard Brothers,** *Sainte Croix, Canton of Vaud*—Manufacturers.

A musical box—Mandoline.

Musical snuff-boxes, playing respectively two, three, and four tunes.

27 **Jaccard Brothers,** *Sainte Croix, Canton of Vaud*—Manufacturers.

Musical snuff-boxes, in horn and tortoiseshell, silver mounted, playing two, three, four, and six tunes. Another box, playing four overtures.

28 **Vaucher, Cesar,** *Fleurier, Canton of Neuchâtel*—Manufacturer.

A watch, gold case, Breguet movement, with equation, seconds and days of the month, silver dial, gold dome, ruby cylinder, eight holes jewelled; weight of case, 34 dwts.

29 **Evard, Edward Phillipin,** *St. Blaise, Canton of Neuchâtel*—Manufacturer.

A gold watch, diameter about 1¾ inches, lever escapement, visible pallets, with compensation balance. The pendulum spring facilitates the regulation of the watch, by its being close to the centre. The balance has two rollers, one for the safety pin, and the other for the lever. Jewelled in 21 holes with rubies. The cup is of chrysolite movement, festooned and engraved. Gold case weighs 24 dwts.; the back and dome are engraved.

30 **Girard, Peter,** *Chauxdefonds, Canton of Neuchâtel*—Manufacturer.

A travelling clock, eight-day movement, possessing an alarum, and showing days of the month, excentric, great chimes during the night and small during the day, repeats at will, enamel dials, anchor escapement, visible pallets, compensation balance, 17 holes in rubies, case engraved, the movement electro-gilt.

31 **Bock, Henri,** *Locle, Canton of Neuchâtel*—Manufacturer.

Three watches, silver cases, enamel dials, cylinder escapements, four holes jewelled.

Three watches, silver cases, enamel dials, lever escapements, 10 holes jewelled.

32 **Lecoultre, D., & Son,** *Brassus, Canton of Vaud*—Manufacturer.

A large musical box, with two combs, playing the following overtures, viz., De Semiramis by Rossini; Robert le Diable by Meyerbeer, and Guilliaume Tell by Rossini.

33 **Jaques, Louis, & Son,** *St. Croix, Canton of Vaud*—Manufacturers.

Musical boxes, playing respectively 8 tunes, with forte-piano; mandoline, 4 tunes; 6 tunes, with drum and cymbals; 4 tunes, with castanets and cymbals; large size, 4 overtures, with forte-piano; mandoline, large size, 4 tunes, with forte-piano; two small, 4 tunes; two small, 3 tunes; six small, 2 tunes; and one, 6 tunes with forte-piano.

34 **Courvoisier, Fred.,** *Chauxdefonds, Canton of Neuchâtel*—Manufacturer.

A gold pocket-chronometer, size about 1¾ inches, Swiss calibre, and regulated from 15° Reaumur, below, to 25° to 30° Reaumur, above zero.

A gold hunting-watch, engraved cases, ¾-plate movement, 1·6 inches, going fusee, spring lever escapement, 8 holes in rubies, silver and enamel dial.

Gold watches:—Watch with engine-turned case, enamel dial, 1·6 inches, independent seconds, lever escapement, Breguet pendulum spring; a hunter, engine-turned case, enamel dial, 1·6 inches diameter, seconds, duplex, 8 holes in rubies; a watch with gold dome, engraved movement, lever escapement, 10 holes in rubies, compensated balance; another gold watch, engraved gold dial, 1½ inches diameter, seconds with straight line, lever escapement, 22 rubies. Silver watches:—One with enamel dial, 1·7 inches diameter, seconds, metal dome, cylinder, 8 holes jewelled, name Houriet; one, plated gold edges, engraved back, enamel dial, cylinder, 4 holes jewelled, metal dome, name G. Grand; a hunter, engraved, enamel dial, 1½ inches diameter, full plate movement, cylinder, 4 holes; and one, engraved, enamel dial, 1½ inches diameter, verge escapement, name Achard.

35 **Bovet & Co.,** *Neuchâtel*—Manufacturers.

Cylinder prints, respectively pink, ultra-marine, covered ground, coloured, and cylinder green.

Handkerchiefs, of varied grounds, with centres; and also plain.

Mezari satin handkerchiefs.

Cylinder prints—lilac; Phillipine; lilac sanded; violet ground; Persian; furniture, with white ground; varied, furniture prints.

Sundry jaconots, cotton prints, and furniture print.

36 **Vaucher, Du Pasquier & Co.,** *Cortaillod, Canton of Neuchâtel*—Manufacturers. (Agent, Henry Pahud, 20 Bread Street, Cheapside.)

Cotton prints in a variety of colours and designs, adapted for dresses and furniture. Jaconots and muslins in checks and coloured.

Printed at the manufactory of Cortaillod, near Neuchâtel.

37 Borel, Boyer, & Co., *Neuchâtel*—Inventors and Manufacturers. (Agent, G. Bahud, 20 Bread Street, City.)

Helvetian grey warp and weft woollen yarn. Steel grey, the warp of thread, the weft of wool. Blue, dyed in wool with indigo, warp and weft woollen yarn. In the natural state, thread warp and wool weft. Blue, dyed in the wool with indigo, wool warp and weft.

38 Jeanneret Brothers, *Neuchâtel*—Inventors and Manufacturers.

Large round baskets ornamented with blue satin; others with satins of various colours watered. The baskets also vary in shape.

Hats and caps for men and boys.

Ladies' bonnets, with lace foundation, straw ornaments; with flowers, &c.; new Tuscan bonnets, yellow Bananier.

Lace for bonnets.

39 Perret, Charlotte, *Locle, Canton of Neuchâtel*—Manufacturer.

A piece of wide lace, 4 French ells in length.

40 Besson, Auguste David, *Couvet, Canton of Neuchâtel*—Manufacturer.

White blonde, measuring 3 yards 1 inch.

41 Mathey, Father & Son, *Locle, Canton of Neuchâtel*—Manufacturers.

A cylinder of rolled steel, about 2¼ inches in width, length about 109 yards, weight about 7¾ lbs., for watch springs, suspension of pendulums, and watch chains. The rough steel manufactured by Messrs. Richard Gros and Son, of Sheffield.

42 Schneiter, J. D., *Tavannes, Canton of Berne*—Inventor and Producer.

Map of Switzerland, in relief.

[This specimen is an interesting example of this peculiar manufacture. The exhibitor is the only manufacturer of maps in relief, in Switzerland. The method which he has invented consists in the use of thick elastic paper, so prepared as to be at once light and strong, and capable of being washed.—R. E.]

43 Dubois, Adolphe, *Chauxdefonds, Neuchâtel*—Designer and Engraver.

Gold plate, exhibiting emblematic figures; ornamental designs for watchmaking, jewellery, &c.; flowers; and fruits.

44 Patton, Jacques, *Chauxdefonds, Neuchâtel*—Artist.

A gold plate, exhibiting letter engraving in a new style, adapted to this art by the producer.

45 Kundert, Fritz, *Chauxdefonds, Neuchâtel*—Artist.

An engraved gold plate, with copy of an ancient German engraving, representing a subject from the history of Switzerland during the time of the Austrian dominion in the primitive cantons.

An engraved gold plate, representing Swiss scenery.

46 Grandjean, P. Henri, *Chauxdefonds*—Artist.

An engraving on gold—refuge after shooting, and landscape.

Copy of an engraving, printed in London in the year 1770, after an original picture in the possession of Mr. Bradford.

This kind of engraving is also applicable for watches, jewellery, &c.

47 Fischer, John Conrad, *Schaffhausen.*

View of the interior of the exhibitor's cast-steel and bar-iron foundry, in illustration of the method of making cast-steel, which differs in three points from that in general use in Switzerland; viz., the melting-furnaces are portable; they contain six crucibles, instead of only one or two; and hot-blast is employed to produce an intense degree of heat scarcely obtainable by high chimneys and a simple draught of air. By this process it is stated that, with 120 lbs. of coke, 126 lbs. of steel may be melted, thus effecting a considerable saving of fuel.

Ingot of meteor steel, a kind of steel invented and named by the exhibitor in 1825: the upper part of this ingot exhibits a fine specimen of crystallization. An ingot, of which a part has been cut off in a transversal direction, to show the interior crystallization, as well as its density and purity. Four bars of the same steel exposed to the action of acids, to discover their damask: the quality may be estimated from the aspect of the grain at the end of each bar.

Two daggers and four razors, of meteor steel, which, with the exception of one, have been put into an acid, to discover their watering, and to show their polish.

Ingot of Swiss iron, converted by direct fusion into very soft cast-steel: part of this ingot is tilted out for a rifle-gun, flattened at the top into a bar of nearly three-eighths of an inch thick, and bent to show its tenacity. Ingot of English scrap-iron, converted by direct fusion into good cast-steel. The butt-end of the ingot, when tilted out into a box, was broken off, to show the grain, hardened and unhardened. This steel is particularly adapted for files.

Gear-wheel, cast in sand, of the same scrap-iron, converted into cast-steel.

Two crucibles, with their lids, differing in form and composition from the ordinary ones: in one of them, bar-iron has been melted.

Two small ingots, consisting of two parts of scrap-iron and one part of copper; showing that these two metals may be united, and that a useful and cheap alloy is thus obtained.

48 Lauterburg, Frederick, 16 *Rue de l'Arsenal, Berne*—Producer.

Impermeable mineral mass, exhibited for its peculiar properties.

Specimens of it, in the construction of linen, cord, packing-paper, pasteboard, and water-proof paper-boxes. This substance remedies the inconvenience caused by wet or humid walls; if the mortar be still sound, such walls may be covered with it, or painted with oil or glue colours. It may be employed for painting upon wood, ships, bridges, ropes, papers, and linen, to which it adds particular flexibility; it is likewise also stated to protect iron and other metals from rust.

49 Pedolin, Pierre, *Chur*—Manufacturer.

Soap-stone, or steatite, exhibited for colour and purity. Powder of same stone, used in paper-mills, for cosmetics, &c.; small quantities reduce the friction in machinery. Steatite is also useful for stoves of superior quality. Polishing stone, of very fine grain. Marbles of various colours; some of them rare.

50 Gwinner, James, *Berne*—Manufacturer.

Water-colours, best quality. Tin pallet, with small tin boxes, containing soft colours. Assortment of large and small cakes of water-colours.

51 Soutter, Gabriel, *Campagne des Lugeon, near Morges.*

Tooth-powder, prepared from an indigenous calcined stone, much used in Switzerland.

52 Baup, H., *Vevey, Canton of Vaud*—Inventor.

Beef, mutton, veal, and fish, preserved in their natural state, without other substances. Quarter of beef, preserved since 1846, and exposed to the variations of temperature and humidity of the open air during that period, without undergoing any change. Fish of the same date. This method of preserving is easy and economical, and may be adopted in all seasons and in any latitude. Before making use of the preserved meat, &c., it is only necessary to soak it in water for a certain time in order that it may resume its natural properties.

53 **Roth, Jacob**, *Wangen, Canton of Berne*—Proprietor.

Horse-hair, black intermixed with grey; bullock's-hair (Swiss), flaxen; and (Brazil), white; horse-hair (Brazil), black; (Swiss), black; and white.

54 **Fogliardi, G. B.**, *Melano, Canton of Tessin*—Proprietor.

Raw silk, spun on a new system; exhibited for its equality, strength, and elasticity.

55 **Laue, Eliza**, *Wildegg, Canton of Argovie*—Producer.

White and yellow raw silk, reeled; cocoons of silk.

56 **Lendenmann, T. Conrad**, *Trub, near St. Gall, Canton of Appenzell*—Manufacturer.

Gelatine from bones, for stiffening silks, and clearing wines.

57 **Stern, Abraham**, *Gunten, near Thoune, Canton of Berne*—Producer.

Wood, hard and soft, adapted for musical instruments, produced in the canton of Berne, and exported to France for the manufacture of pianos.

58 **Ledoux, Augustus**, *Geneva*—Inventor.

Frame of a double lithographic press, raising indifferently either on the right or left, thus avoiding the return of the carriage after the drawing of the first copy. This frame is adapted to the lithographic press of English construction.

59 **Schilt, V.**, *Soleure*—Inventor and Manufacturer.

Calculating machine, applicable for the performance of addition with ease and accuracy. In its use, the instrument is first set in motion by lowering the knobs which are fixed to the small box till they stop, and then allowing them to come up again, then by pressing on the several parts marked with numeral figures, on those of them intended to be added together, their sum will be shown at the upper opening. The inside of the machine may be seen by removing the screws and iron plate underneath the box, but none of the other screws should be touched.

60 **Boelstler, Joseph**, *Arau, Canton of Argovie*—Manufacturer.

Improved machine for cutting bread. The knives (of English cast steel) are screwed so as to be easily taken off and fitted on again. One person with this machine can cut bread for 150 persons in an hour. Many of these machines are manufactured for the Swiss barracks, inns, hospitals, boarding-schools, &c.

61 **Darier, Hugues**, *Geneva.*

Press for cutting out and stamping; it has been in use for several years. Specimen of watch hands, as they leave the stamp, produced by this instrument.

62 **Schelling & Co.**, *Horgen, Canton of Zurich*—Manufacturers.

Sheets for cotton carding, and for sheep wool. Pillets; cotton pillets. Leather cards.

63 **Stotzer, Frederic**, *Buren, Canton of Berne*—Manufacturers.

Files of various kinds used for clock-making, with a numerous assortment of polishing instruments in steel, the whole inclosed in a round frame.

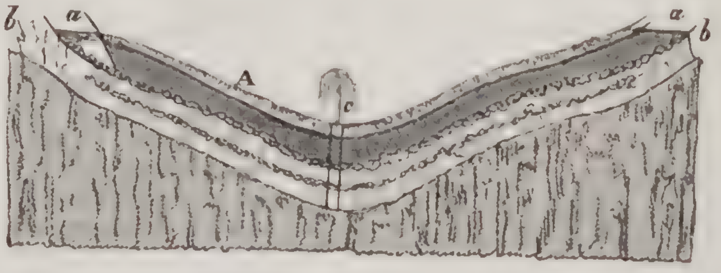
64 **Pagan, Francis**, *Geneva.*

Tools for engraving landscapes, flowers, zones, and other ornaments on watch-cases and gold dials. Burnishers. Punches; punches in relief. Polishing chisels. Tracers. Four ivy leaves; two oak leaves. Six various leaves. Two flower works. Four tools for engraving blades of grass. Three hollow tracers; one double relief tracer. Four tools for engraving the bark of a tree. One tool to designate towns on maps, painted on watch-cases. This tool produces a drawing which can be easily seen when the piece is enamelled.

65 **Laue, Frederic**, *Wildegg, Canton of Argovie*—Inventor and Manufacturer.

A new patent boring apparatus for artesian wells, consisting of boring tubes supplied with a valve-auger, by which, during the process, the mud produced by the borer is removed by penetrating into the tube. By this means the auger is preserved from fouling. The use of this apparatus is shown in combination with thin poles, on a smaller scale. This apparatus was employed for boring to a depth of 1,300 feet in the Jura.

[Perpendicular borings in the ground for water are called Artesian wells (*Puits Artésiens*), from the circumstance that they were first used in the district of Artois, in France. Their character will be best understood from a diagram. Here A is the surface soil of the district, to which a water supply is desired; *a a* is a thick mass of rock or clay, through which the water finds its way with difficulty. Below this exists a sandy, gravelly, or other pervious stratum *b b*, which extends under the district, and coops out in some distant hills. This is the case with the chalk formations of the metropolis. *c* is an Artesian boring through the superincumbent mass, through which the water rises to the surface and overflows, this being due to the pressure of the water in this basin. Artesian wells are now of very common occurrence, and although thought to be of recent construction, they appear to have been long known in Italy and in Artois, and probably to the ancients. Niebuhr, quoting from Olympiodorus, writes, "wells are sunk in the Oases, from 200 and 300 to 400 yards in depth (the yard being equal to half a foot), whence the water rises and flows over."—R. H.]



66 **Kapp, Charles Henry**, *Lausanne.*

Long bows for ladies and gentlemen, made of laburnum (or cytisus tree) of the Jura, the grasp in amaranth velvet, adorned with silver. Bow for gentlemen, which can be taken to pieces; the moveable part is ornamented, the grasp is in iron covered with satin. Bows with simple strings (fillets), ornamented. Case containing arrows, remarkable for the numerous pieces of wood, of different colours, of which they are composed. One is composed of 1000 pieces of common wood.

67 **Peter, Jean**, *Geneva.*

Double-shot gun, single barrel, and with loads placed over one another. A single trigger suffices to discharge two shots in succession, an arrangement of value in quick shooting.

68 **Sauerbrey, Valentin**, *Bâle*—Manufacturer.

Swiss rifle, cast-steel barrel, patent screw; ornamented with history of William Tell. Leather case, ramrod and cleaning rod of whalebone. Walnut case with necessary instruments.

[The fire-arms of Switzerland are highly esteemed, more for their precision and solidity, than for their beauty; indeed, the excellence of those made in the factories of Bâle, Schaffhaurem, Zurich, Aarau, Berne, Vaud, Geneva, and many other cantons, cannot be surpassed. The superiority of the Swiss riflemen, is in a great measure owing to the excellence of their weapons. Although possessing numerous fire-arm manufactories, the more common sort are imported from Belgium, France, and England.—D. C.]

69 Vannod, John, *Lausanne*—Manufacturer.

Improved rifle, with apparatus. The touch-hole is placed on the left side.

70 Chollet, Samuel, *Mondon*—Proprietor.

Aromatic caoutchouc. Pitchfork with four points; of middling size; and little. Rakes for hay-making. Scythes with handles. Pitchforks, middling size. Godet, with stones for sharpening scythes. Knife for vine-pruning.

71 Destraz, Lewis, *Moudon*—Manufacturer.

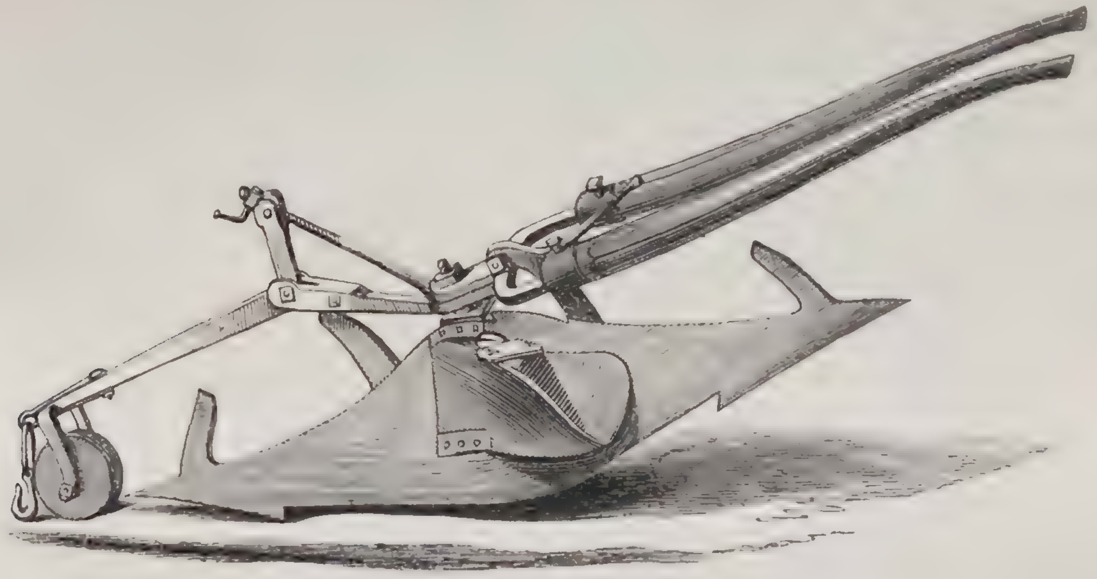
American rifle, with apparatus.

Barrel-churn; a form with large discs. Milk-can. Large milk-bucket. Tub for milking cows. Butter-mark, bearing the English arms. Bee-hive.

72 Gisin, John, *Liestal, Bâle*—Inventor and Manufacturer.

Patent iron plough, which unites the two systems of the swivel and common ploughs. The plough can be used like the common plough, though having a peculiar screw; and like the common Scotch or Flemish plough, with equal advantage.

This plough is represented in the annexed cut.



Gisin's Patent Iron Plough.

[In the manufacture of agricultural machines, Switzerland, comparatively speaking, is much in advance of her neighbours; many of the cantons manufacture machines on the latest and most improved models. She likewise possesses a few forges for the manufacture of iron-ware, such as scythes, shovels, &c., but not in sufficient quantity to supply the demand, part being imported from France and Germany.

Carts and waggons are generally of good quality, particularly those made at Geneva for exportation. The wood and iron-work is considered to be of first-rate material. The cotton trade of Switzerland being of considerable importance, we find from those cantons where it most flourishes, numerous workshops for the manufacture of weaving and spinning, and hydraulic machines. Some of the larger firms excel in steam-engines, and the building of iron steam-boats, some of which are exported. The principal machine manufactories are those of Zurich, Berne, Soleure, Bâle, St. Gall, Argovie, Thurgovie, Genève, and Vaud; one of the manufacturers of Zurich employ no less than 600 workmen.—D. C.]

73 Aubert, L. Augustus, *Lausanne*—Manufacturer.

Gold watch, shortened lever-escapement, scale-balance compensation, cranked-spiral, independent seconds hand, composed of one single wheel, put into motion by the watch itself, without having a barrel striking the seconds from the centre.

74 Baron & Uhlman, *Geneva*.

Cylinder watches, four holes jewelled, gilt copper case, and gilt metal dial; the same in silver case, and with gold plated rims, enamelled dials: the same with gold case, silver dials, and gold numbers; and the same with eight holes jewelled, enamelled gold case, and enamelled dial. Patent watches, outside and inside gold cases, enamelled dials, thirteen holes jewelled.

75 Daguet, Theodore, *Soleure*—Manufacturer.

Flint-glass and crown-glass rectangular prisms.

Unpolished discs of flint-glass, diameters from 4 to 15 inches. Crown-glass unpolished discs, diameters 4 to 6 inches. These glasses are all for optical uses. The flint-glass is composed of an amorphous silicate of lead and of potash; the crown-glass of an amorphous silicate of potash and lime.

[The term flint was applied to glass, from it originally being made of calcined flints, and it still retains the same name, although the use of white sand has superseded the use of flints. It is that fine glass of which the most valuable articles in domestic and ornamental use are made. Crown glass differs in its composition from flint, in containing no lead, or metallic oxide, except manganese, and which is used for correcting its colour. It is used for the best window glass, and is much harder than flint glass.—R. E.]

76 Darier, Hugues, *Geneva*.

Samples of watch-hands and key-pipes; the edges are as they come out of the stamp.

77 Du Commun Girod, Frederick William, *Geneva*—Manufacturer.

Musical boxes, carved and marquetrie.

78 Elfroth, David H., *Geneva*—Manufacturer.

Pen-holder watch, with a horizontal escapement, eight ruby holes, which goes thirty-two hours, showing the hour, day of the week, and day of the month. It is wound up and set to time without a key, by the small buttons on the outside, and regulated by the index at the end. As the narrow space does not allow many wheels, this has one less than the usual number, and it has no barrel: it is set in motion by a worm-spring in the holder.

79 Fatio, Junod Alph., *Geneva*—Manufacturer.

Gold watches, l'epine mechanism, free escapement, and lever spring, thirteen rubies, compensated balance-wheel, copper-inlaid wood and scale case, and a gold key.

Gold watches, with a double case, l'epine mechanism, cylinder escapement, eight rubies, a scale case, gold key, Turkish dial, and a Roman dial.

80 Felchlin, Charles, *Berne*—Manufacturer.

Bass clarionet, of improved construction, made of boxwood, inlaid with ivory, having 17 brass keys, the nib of grenadille wood the binding plated.

Boxwood clarionet (C. B flat), inlaid with ivory, 13 plated keys, improved construction, with two nibs, and plated binding, in a case. Ebony flute, inlaid with ivory, silver groove, 10 plated keys, in a case.

[The basset horn, bass clarionet, or English horn, is little known in this country. It was invented in 1770, by Theodor Lotz, of Presburg. It is a common practice in Germany to have two hole pieces of different lengths for the same clarionet; hence the description C B flat.—H. E. D.]

81 Hommel-Esser, Frederic, *Aarau, Canton of Argovie*—Manufacturer.

A complete case of mathematical instruments, made of German silver and English steel. The compasses open with a peculiar and equable movement, and the workmanship of all the joints, screws, &c., adapt them for describing small circles, &c., accurately. The drawer at the bottom is for the reception of India ink, colours, pencils, &c.

Pair of pocket compasses, of fine German silver and English steel; open in a case to show the construction.

[The study of mathematical and physical sciences are much pursued in Switzerland, and many of the cantons deservedly enjoy a high reputation for the manufacture of optical and physical instruments, especially those of Aarau, Geneva, and Zurich. There are many eminent mathematical instrument manufacturers in the Canton of Argovie, whose instruments are much sought after, for their beautiful finish and moderate price.

Almost all the towns of Switzerland possess workshops for the construction of musical instruments. Pianos and other instruments are exported. The trade in musical boxes is special to the watch-making cantons. Geneva and the small town of St. Croix, in the Canton of Vaud, are the principal seats of this trade.—D. C.]

82 Frey, Adolphe J. G., *Geneva*—Manufacturer.

Two upright trichord rosewood pianofortes, one with oblique strings, seven octaves, and metallic hammers.

83 Gay & Luquin, *Geneva*—Inventors.

Complicated musical box, imitating a military band, plays six modern tunes, the barrel is nineteen inches long, and three inches four-tenths in diameter; it contains also harmonic tones, a drum, two castanets, twelve small bells, and a large drum, which are not seen; with a carved box and moveable glasses.

84 Goldschmid, James, *Zurich*—Manufacturer.

Planimeter, by M. Wettli, for calculating mechanically the area of planes, whatever may be their figure.

85 Gisi, F., *Aarau, Canton of Argovie*—Manufacturer.

Complete case of mathematical instruments of the finest quality, made of German silver.

86 Huebscher, Christian, *Schaffhausen*—Manufacturer.

Bugle trumpet, with cylinder valves. Trumpet in C, with same valves.

87 Hueni & Hubert, *Zurich*—Inventors and Manufacturers.

Patent harpsichord pianoforte, of peculiar mechanism, based upon a calculation of the spring tension: the number of parts to a key are reduced to 26, by which means the touch is said to become more elastic, and the sound fuller.

[Harpsichords are provided with quills in place of hammers to sound the strings. The pianoforte was first invented by Christopher Gottlieb Schröter, 1684. The dampers were introduced by Leuker, 1765. The first square pianoforte was made by Wagner, 1774.—H.E.D.]

88 Kern, James, *Aarau, Canton of Argovie*—Manufacturer.

Mathematical cases of German silver; and of brass.

89 Kuetzing, Charles, *Berne*—Manufacturer.

A grand pianoforte; the wrest and hitch-pin blocks are of iron, which increases the sound, and renders the tuning more permanent.

90 Lecoultre Brothers, *Brassus, Canton of Vaud.*

Musical box, plays four overtures, with two key-boards. Musical pianoforte, plated box, inlaid work, and glass.

91 Leuba, Henry, sen., *Bâle*—Manufacturer.

Two travelling clocks, furnished with an alarum, &c.

92 Golay-Lereche, Augustus, *Geneva.*

Pocket chronometer with repeater and thermometer, gold hunting case; this chronometer possesses a stop in the balance-wheel to take accurate time. This stop, the key of which is placed under the cover of the case, to prevent its moving accidentally, is so arranged as to stop at once the balance-wheel without danger to its pivots.

[It requires some experience to note the exact time at which any phenomenon takes place, but certainly the best plan of doing this, is that adopted by astronomers, who take a second from their clock, and count the beats by the ear, while the eye observes the object of observation, and by this way, the time of any phenomenon is noted to a small fraction of a second. Stop-watches are intended for inexperienced observers, and such watches have usually a large seconds-hand upon the dial, which is stopped with more or less accuracy, by pressing some part of the mechanism, at the moment the phenomenon is observed.—J. G.]

93 Lombard-Janpeu, Charles A., *Geneva.*

Wooden leg, used either for amputation below or above the knee; with girdle and straps.

94 Lutz, —, sen., *Geneva*—Inventor and Manufacturer.

Hair springs, exhibited for their elasticity and tenacity.

Hair springs, specially suited to marine and other chronometers. Hair springs, intended to resist the effect of heat and cold in altering their shape.

95 Masset, Louis, *Yverdon, Canton de Vaud*—Inventor and Manufacturer.

Patent planetarium, accompanied by a new method of explaining astronomical phenomena by the real motions of the planets, without reference to their apparent motions.

The sun, the earth, and the moon are put into motion by an arrangement of wheels, which serve to regulate their motions, so that the sun is made to revolve on his axis in 25½ days; the earth performs her revolution in 365 days, and the moon in 27 days. A lamp or taper may be fixed in the place of the sun to represent the effects of solar light.

96 Mercier, S., *Geneva*—Inventor and Manufacturer.

A chronometer, having a spring escapement, jewelled, compensation balance, face enamelled, gold case, engine-turned.

Half chronometer, for the use of the deaf and blind, being a new invention, with spring escapement, mounted and jewelled, compensation balance, enamelled face with seconds, gold hunting case; the watch to be wound up, and to be set to time on the top of the ring.

Watch, with Mercier's free escapement, a new invention, enamelled face, gold case, &c.; watch, with cylinder escapement, jewelled face, enamelled gold case, with blue enamel on the back, and a painted group of flowers. Watches, Louis XV. à la renaissance; gold cases, with enamelled backs, &c.

Bracelet, set with pearls, and small watch-ring, with fine rubies.

[Watch-cases are usually painted on the opaque white, and a flux of glass is afterwards fused over the painting. Small devices for jewellery are also painted on the opaque white.—J. H.]

97 Metert & Langdorf, *Geneva*—Manufacturers.

Musical boxes, playing six tunes, with bells and drum at pleasure, ebony and black cases; musical boxes playing four tunes, mandoline, black case, all with metallic incrustations.

98 Meylan-Golay, H., *Geneva.*

Gold watch, striking the hour and quarters, and repeating when wanted, with duplex escapement, all the holes in rubies and thirteen jewels, compensation balance, the whole mechanism is exposed to view, face enamelled, with seconds, and the back engine-turned.

99 Patek, Philippe, & Co., *Geneva*—Inventors and Manufacturers. *Vide* No. 274.

100 Pupunat, F. H., *Lausanne*—Manufacturer.

Two violins, the vaults made after a new system; two violin bows. Violoncello, on the same system as the violins.

Different parts of a violin, for explaining the maker's improvements.

101 Retor, Francis, *Geneva*—Inventor and Maker.

Chronometer. New strong detached lever-escapement; the regulator is independent of the body of the wheel-work, in order to avoid the effects of oxidation, &c.

102 Schneider, Frederic, *Berne*—Proprietor.

Relievo, representing a view of the Jungfrau, taken from the Wengern alp, in the Bernese Oberland.

Artificial teeth, with enamel, natural hippopotamus-ivory teeth, mounted in gold, &c.

103 Sprecher & Baer, *Zurich*—Manufacturers.

Pianoforte, in the finest and most durable woods of Switzerland; exterior, nut-wood, ornamented in the style of the middle ages. The peculiarity of the mechanism is in a continual escapement, producing precision of touch, and power of tone.

104 Jaccard, Lewis—*Lausanne.*

Convex and biconcave glasses for cataract. Periscopic, convex, and concave glasses. Cylindrical magnifying glasses, in crown glass, made by Mr. Daguet, at Soleure; and in French crystal.

105 Paquet-Fazy, Mde., *Geneva.*

Watch spiral springs, made of the best English stub-steel.

106 Junod, Theodore, *Lausanne*—Maker.

Cupping apparatus.

107 Wermuth, John, *Signau, Canton of Berne*—Producer and Proprietor.

Osteotome (a chirurgical instrument).

[The principal manufactories of fine cutlery are those of Argovie, Schaffhausen, Vaud, and Geneva. The cutlery of Aarau is held in high estimation, and is exported in considerable quantity. Schaffhausen has several factories of military-arms, edge-tools, and razors, made of a particular steel, called "acier météorique." The Canton of Vaud is noted for cutlery, especially razors. Many of the cantons are held in high repute for the manufacture of files, edge-tools, and surgical instruments.

Common cutlery and edge-tools are imported to Switzerland from England, France, and Germany.

Instruments for engraving and chasing are exported from Geneva and Neuchâtel.—D. C.]

108 Ziegler, Henry, *Winterthur, Canton of Zurich*—Proprietor.

Machine for measuring the distance of gun-balls from the centre.

109 Alder & Meyer, *Herisau, near St. Gall, Canton of Appenzell*—Manufacturers.

White embroidered muslin for ladies' dresses.

Embroidered curtains, long stitch on net foundation, coloured.

White muslin, embroidered stare au crochet, and other curtains.

Bed-cover, embroidered; muslin, half-silk, broché in colours; and with flowers.

Cravats, coutil plain, coloured; with silk borders; and broché with silk.

110 Alther, John Conrad, *Speicher, near St. Gall, Canton of Appenzell*—Manufacturer.

Various articles in muslin embroidered with cotton, chenille, &c. Muslin, embroidered with coloured wool.

111 Anderegg, Toby, *St. Gall*—Manufacturer.

Ginghams, jaconet; fine cambric; and figured cambric.

Jacket stuffs. Cotton satin. Cotton nankin. Cottonade, solid.

Shawls, figured fine, with wool fringes; tartans; chinés; figured cotton fringes.

Pocket-handkerchiefs, coloured in fast colours.

Paris jaconet. Nainzooks. Jaconet, batiste stiffening. Superfine cambric, without stiffening, for shirts, &c.

112 Baenziger & Co., *St. Gall*—Importers.

Muslins, plain, white, checked, coloured, embroidered, striped, figured, &c.

Balzorines, printed. Cravats.

Shawls, white and figured, coloured, embroidered; and with needle-work and tambour-work.

Ladies' dresses, with jacquard-work, woven needle-work, white-embroidered, coloured, &c.

Curtains, embroidered with needle-work; and jacquard-work.

Embroidered ladies' handkerchiefs, printed handkerchiefs, &c.

113 Beugger, John, *Wülflingen, Canton of Zurich*—Manufacturer.

Ropes of cotton-yarns, bobbins, "chain" (*warp*) and woof.

114 Blum, Thomas George, *Winterthur, Canton of Zurich*—Manufacturer.

Parcel of cotton-yarn.

115 Boesch & Sons, *Ebnat, Canton of St. Gall*—Manufacturers.

Muslin ginghams; the same, with jacquard. Small ginghams. Cottoline d'Origon. Ginghams, striped, satined, &c.

Long shawls, with jacquard. Verona handkerchiefs. East Indian handkerchiefs, dyed, red and blue, red and green. Handkerchiefs, &c.

Cravats, French cambric. Scarfs.

Shawls, Barège, gauze-coloured, and fringed.

Muslin, striped, twisted, thread, &c.

Barège, with and without flowers; jacquard-dyed; the same, with jacquard-striped, dyed.

116 Blumer & Ienny, *Schwanden, Canton of Glarcis*—Manufacturers.

Cotton, muslin tasmas, and jaconet tasmas, printed handkerchiefs. Handkerchiefs.

Chintz, cotton damask. "Kaiupaujaugs."

Breitenstein, John, & Co., *Zofingen, Canton of Argovie*—Manufacturers.

Cottons for ladies' dresses; and aprons. Table-cloths, bleached.

Pocket-handkerchiefs, half-linen; and bordati for children, cotton.

118 Bruderer, John, *Teufen, near St. Gall, Canton of Appenzell*—Manufacturer.

Robes (dresses), plain muslin for corsages.

Tablier, plain white muslin, coloured, embroidered, amarantes.

Volans. Plis, with border and lace applied. Plis, &c.

119 Braendlin Brothers, *Rapperschwyl*, and Hurlimmann, John, *Richterschwyl-Uznach, Canton of St. Gall*—Manufacturers.

Three large ropes of cotton "chain" (*warp*) spun from Egyptian mats.

120 Buehler & Sons, *Rollbruner, Winterthur, Canton of Zurich*—Manufacturers.

Cotton-yarn.

121 Clais (Von), Charles Sebast., *Winterthur, Canton of Zurich.*

Specimens of cotton yarn "chain" (*warp*).

122 Fehr, J. C., *St. Gall*—Manufacturer.

Jaconet, coloured-ground, with plain stripes.

Gauze, white ground, with coloured satin stripes; and coloured ground, figured in white; and white ground, à la Jacquard.

Muslin, white ground, with figured stripes; white ground, woven in colours à la Jacquard; and figured with the needle; muslins, variously made and embroidered.

Bobbinet shawl, with white-tamboured embroidery.

Muslin dress, white-tamboured knitted embroidery, with two folds.

Muslin dress, white embroidery, with coloured glass beads, with tunic.

123 Greuter & Rieter Brothers, *Winterthur, Canton of Zurich*—Manufacturers.

Turkey-red printed calicoes, several colours; and union croisé, Jacquard weaving.

Handkerchiefs, Turkey-red, and printed in five colours.

[The Swiss possess about 250 dyeing factories for thread and woven stuffs. The Turkey-red dyeing establishments are of great renown, and the Canton of Zurich alone reckons fourteen. The Cantons of St. Gall, Glaris, and Thurgovie are likewise held in high repute for their dyes in red and other colours. These factories produce large quantities of goods for exportation.

In the Canton of Neuchâtel, the manufacture of printed cottons dates from the middle of the eighteenth century, where it once considerably prospered, but of late years has much diminished, and now reckons only two establishments.—D. C.]

124 Heiniger, James, *Berthoud, near Berne*—Manufacturer.

Cotton canvas and fine Java, coloured and striped.

Canvas made from a new material used in the carpet manufactures.

125 Huerlimann, John, *Richterswyl, Canton of Zurich*—Manufacturer.

Red and brown printed chintz, with six colours, for curtains, &c.

Jaconets, with five colours, for ladies' dresses, &c.

Muslin, of one colour.

126 Imhoof, Brunner, *Winterthur, Canton of Zurich*—Manufacturer.

Specimens of cotton-yarn "chain" (*warp*).

127 Imhoof, Brunner, & Co., *Winterthur, Zurich*—Manufacturers.

Specimens of muslins.

128 Kunz, Henry, *Uster, Canton of Zurich*—Manufacturer.

Yarns, twists, &c. Thread for ribbon manufacturing; sewing thread; dyed sewing thread upon bobbins; woollen cloth.

129 Lauterburg, J., & Co., *Langnau, Canton of Berne*—Manufacturers.

White drill, cotton and thread; cotton only; and mixed coloured.

The white drill is made of Swiss thread, bleached before being woven, and without any preparation.

130 Leumann Brothers, *Mattweil, Canton of Thurgovie*—Manufacturers.

Assortment of Turkey-red dyed cotton yarns of different numbers; the same fast rose.

131 Naef, Mathias, *Niederutgwyl, Canton of St. Gall*—Manufacturer.

Moreas, half cotton; luting, satined; Jacquard; hakirs; gingham, &c. shawls for negro women.

132 Rieter, T. J., & Co., *Winterthur, Canton of Zurich*—Manufacturers.

Cotton yarn; specimens of bancs-à-broches preparation.

133 Rikli, A. F., *Wangen, near Berne*—Producer.

Spun cotton, dyed red. Exhibited for durability and colouring.

134 Schiesser, Gabriel, *Hard, near Zurich*—Manufacturer.

Handkerchiefs printed on both sides.

135 Schlaepfer, John, *Herisau, Canton of Appenzell*—Manufacturer and Importer.

Plain muslin.

136 Schmid, Henry, *Gattickon, Canton of Zurich*—Manufacturer.

Cotton yarn "chain" (*warp*) and woof.

137 Schwarz, H., *Rickon, near Winterthur, Zurich*—Manufacturer.

Specimens of cotton yarn.

138 Springer, J. J., *Schaffhausen*—Importer.

Hand-spun yarn.

139 Sturzenegger-Nef, L., *St. Gall*—Manufacturer.

Printed cravats on jaconets; jaconets, steam-dyed, &c.

140 Vonwiller, Ulric de Gaspard, *St. Gall*—Importers.

Plain white tarlatan and plain white muslins, manufactured by Ramsauer Aebli, and Messrs. Tribelhorn and Maier.

Fancy muslin dresses; figured muslins; figured and spotted muslins; spotted jaconets; white figured dresses, made by loom; white tambour embroidered muslins, figures and spots; and in colours, all cotton, Persian and Levantine style of designs and colours, made by hand.

Insertions (cotton) by loom; embroidered insertions, by hand; embroidered bands.

Collars, all cotton—pocket handkerchiefs, all cotton, manufactured by M. J. Qüst and Sons. Pocket handkerchiefs of real batiste linen, made by hand.

Embroidered collars and veils for mourning, silk on crape ground, made by hand, manufactured by M. J. H. Wieser.

141 Walty Brothers, *Schöftland, Canton of Argovie*—Manufacturers.

Silk handkerchiefs, cravats, cords, &c.

142 Winkler, Thomas C., *Friedthall, Canton of Zurich*—Manufacturer.

Cotton yarn chain (*warp*).

143 Zaehner & Schiess, *Herisau, Canton of Appenzell*—Manufacturers.

Tarlatan, croched; muslin curtains; muslin nets; batiste handkerchiefs, embroidered.

144 Zeller, Henry, *Zurich*—Dyer.

Spun cotton, solid Turkey-red dyed.

145 Zellweger, Salomon, *Trogen, Canton of Appenzell*—Importer.

Jaconets, woven from Swiss-twist, stiffened by Mayer and Frûh Herîsau.

146 Ziegler, T., & Co., *Winterthur*—Manufacturers.

Merinos, prints, cotton, and yarns red dyed.

147 Billeter, Zuppinger, *Herzogenmuelle, Zurich*—Manufacturer.

Specimens of cotton yarn.

148 Custer & Schachtler, *Altstädten, Canton of St. Gall*—Manufacturers and Importers.

Orleans quadrillé; façonné, and broché; half silk broché.

149 Ernst, Ferdinand, *Winterthur, Canton of Zurich*—Manufacturer.

Mixed coloured cassinets, for gentlemen's summer dresses.

150 Kelly, J. J., *of Mettendorf, near St. Gall*—Manufacturer.

Turkey-red cloth.

Turkey-red prints, four colours; one and two colours; and various colours; for clothing or furniture.

151 Mueller, Pluess, & Co., *Zofingen, Canton of Argovie*—Manufacturers.

Merinos of fine and common wool. Tartans, half wool. Milaine uni. Poil de chevre, half wool.

Sicilienne, half wool; striped silk, half wool.

Ecossaise, one-third wool. Berlines, half wool.

Cassinets, half wool. Stokinets, half wool.

Damier, half wool; pointille, half wool. Etoiles, all cotton.

[The Swiss possess about 500,000 sheep, of which the wool is considered to be of medium quality. She purchases more wool than she exports; Hungary, Bavaria, Wurtemburg, and the Grand Duchy of Baden, supplying annually about 12,000 quintals of raw wool.

The cloth trade was formerly of considerable importance in Switzerland, but at present she consumes more than she produces. The Zollverein States import annually woollen cloths to the value of 20,000,000 francs, France 10,000,000 francs, and Austria 1,500,000 francs. They manufacture the coarser and stronger cloths in considerable quantities, and a material called *half-cloth*, composed partly of wool and cotton. The principal cantons of this manufacture are Zurich, Berne, Lucerne, Uri, Schwitz, Unterwald, Bâle, Grisons, Tessin, Vaud, Valois, and Neufchâtel.—D. C.]

152 The Swiss Manufacturers of Silk Ribbons.

Twenty-one glass cases, containing 2,814 specimens of ribbons, from the following Manufacturers:—

Koechlin & Sons, *Bâle;*
H. A. Senn & Suter, *Zofingud;*
Jean François Sarasin, *Bâle;*
B. di B. Staehelin, *Bâle;*
Sulger & Stueckelberger, *Bâle;*
Buxtorf & Bischoff, *Bâle;*
Freres Bischoff, *Bâle;*
T. F. & T. Frey, *Arau;*
Charles Ryhiner, *Bâle;*
Lui. Preiswerck, *Bâle;*
Siber Bischoff, *Bâle;*
Richter Linder, *Bâle:*
T. De Bary & Bischoff, *Bâle;*
F. Feer & Co., *Arau;*
Waldner & Staehelin, *Bâle;*
Dietrich Burckhardt, *Bâle;*
Goetz & Ecklin, *Bâle;*
T. T. Bakofen & Sons, *Bâle;*
Freyvogel & Heussler, *Bâle;*
Emanuel Hoffman, *Bâle;*
M. Oswald & Co., *Bâle;*
Frey Thurneisen & Christ, *Bâle;*
T. B. Burckhard & Sons, *Bâle;*
D. Preiswerk, & Co., *Bâle;*
Soller & Co., *Bâle:*
Sarasin & Co., *Bâle.*

[The manufacture of silk in Switzerland is extremely ancient, and dates many centuries back. It received a great stimulus at the period of the Repeal of the Edict of Nantes, when the cruel persecutions of the Protestants compelled a great number of French merchants to emigrate to Switzerland. From this epoch dates the prosperity of this branch of commerce, and at the present period forms one of the greatest sources of the affluence of the country. It is a remarkable fact that, notwithstanding the absence of protective duties, and even circumscribed by many of the neighbouring States by high protective customs, the silk manufacturers have succeeded by energy and industry in overcoming every obstacle.

Many of the cantons, especially the Tessin, the Grisons, and Geneva, are giving much attention to the production of raw silk, which is yearly pursued with greater success; the raw material, however, at present principally comes from the Austrian States, Piedmont, and Italy; the medium importation is about 30,000 quintals annually.

The Canton of Zurich is one of the most populous in

Switzerland, and the centre of the manufacture of silk-stuffs, and Bâle, that of ribbons. In both cantons, silks of the most elaborate kind, and beautifully finished, are manufactured; but they generally confine themselves to the more common and ordinary qualities. The Canton of Argovie, after Zurich and Bâle, is next in importance in this manufacture. The purity of the water in this canton appears to be instrumental in giving brilliancy of colour.

The silk manufactories of Zurich occupy part of the inhabitants of the adjacent Cantons of St. Gall, Zug, Schwitz, and Lucerne. There are about 150,000 looms, of which 95 per cent. work at home on plain and common stuffs, and 5 per cent. on figured silks and shawls. From 20,000 to 25,000 workmen are dependent on this branch of industry. The average returns are from 25 to 30 millions of francs per annum, varying according to the price of the raw material; 75 to 80 per cent. is about the cost; 20 to 25 per cent. is consumed in the process of dyeing.

The greater proportion of the weavers, men, women, and children, are occupied during the summer in the cultivation of their grounds, and take to the loom in winter and leisure hours.

The principal articles are the Florence and Marcelines, which are nowhere made to greater perfection. The weavers also excel in the manufacture of plain silk dresses for costumes, striped and watered silks. The glacé silks are considered to be of a very superior quality, being woven by first-rate workmen, who are paid high wages, and who, in other districts, apply themselves to the fancy stuffs.

The weaver, by the above system, is enabled during the slack season to maintain himself on his own piece of ground. Necessity makes him diligent and content, and luxuries are unknown to him.

The merchants and manufacturers are satisfied with small profits, and by a well-regulated system, economy, diligence, and business habits overcome the prejudicial effects of high duties, so injurious to the export trade. Since 1830, the exports have considerably increased, which is partially to be attributed to the superiority of their goods, and their rapidity in the execution of orders.

The improved machinery in the cotton manufactories has caused a great reduction in the number of hands, and has, no doubt, materially contributed to the increase of the silk trade.

There are some silk-stuff factories in the Canton of Bâle, but the staple trade of this town lays in the manufacture of silk ribbons. In this and the neighbouring Canton of Bâle-Campagne, there are about 4,000 looms, which give employment to 16,000 workmen, as weavers, dyers, &c. Manual labour is extremely cheap, enabling the manufacturer to sell at a very low rate. The principal part of the manufacturers of this canton employ their own capital, and have not to surmount those difficulties and disadvantages inseparable from the employment of borrowed capital. The medium annual produce of the manufactures of Bâle is about twenty millions of francs, part of which is imported into most European countries, America, and the Colonies. The principal articles of manufacture are plain taffeta ribbons, plain satin and figured ribbons: in all these articles, Bâle maintains an incontestable superiority.

The most cordial understanding exists between employers and employed, and the strikes and coalitions so injurious to other manufacturing countries are unknown in Switzerland. There is no fixed tariff for the price of manual labour.

The silk trade in this country has grown and prospered without the aid of protective duties, and it is a remarkable fact that the difficulties occasioned by the high prohibitive customs of other States, instead of being prejudicial, have been of advantage, by increasing the active genius and emulation of the manufacturers, and inducing them to seek more distant and more favourable outlets for their goods. The morality, activity, and commercial knowledge of the Swiss may be considered the basis of their success in this most important branch of trade.—D. C.]

153 FORTY-TWO MANUFACTURES OF SILK STUFFS, *Canton of Zurich.*

Two hundred and eighty-four pieces of silk, in glass cases, consisting of Mitlorences, Florences, Marcelinettes, Marcelines, Taffetas, Lustrines, Gros de Florence, du Rhin, Lustre, de Suisse, Varié, d'Orleans, Favori, Poultz de Soie, Gros brillant, Serges, Grosses Cotes, Satins de Chine, de Prusse, Satins légers, forts, for waistcoats, armures, ottomanes, imperiales, velvets, unis, rayés et faconnés, fischus, brooches, cravates, in all qualities from the following forty-two manufacturers of the Canton of Zurich:—

Amann & Egli, *Thalweil.*
Jean Amann, *Thalweil.*
Baumann & Streuli, *Horgen.*
Salomon Escher, *Zurich.*
Robert Fierz, *Zurich.*
Wirz & Cie, *Zurich.*
Huber-Rordorf.
Hoehn & Baumann, *Horgen.*
Fréres Meyer, *Zurich.*
Naef & Schwarzenbach, *Thalweil.*
Fréres Neumann, *Zurich.*
Fréres Staub, *Horgen.*
Les Fils de J. Stapfer, *Horgen.*
Auguste Gessner, *Waedenschweil.*
Suremann & Cie, *Meilen.*
J. J. Schwarzenbach, *Kilchberg.*
Ryffel & Cie., *Staefa.*
Jacob Zurrer, *Hausen.*
Felix Zeller & Fils, *Hirslanden.*
Zeller & Cie., *Balgrist.*
Burkhard & Naegeli, *Horgen.*
G. Forrer-Biedermann, *Winterthour.*
Hoehn & Staeubli, *Horgen.*
S. Rutschi & Cie., *Zurich.*
Stunzi & Fils, *Horgen.*
Rod. Klaus, *Uster.*
Lussy & Cie., *Zurich.*
Fréres Schwarzenbach, *Ruschlikon.*
Stapfer-Kölla, *Staefa.*
J. J. Widmer-Huni, *Horgen.*
R. Zuppinger & Fils, *Maenedorf.*
Meyer & Cie., *Zurich.*
J. Widmer au Kreutz, *Zurich.*
Brupbacher & Bleuler, *Zollickon.*
Stapfer, Huni, & Cie., *Horgen.*
Noz & Diggelmann, *Zurich.*
Hy. Brunner, *Zurich.*
Schmid & Abegg, *Kussnacht.*
Fréres Sculthess, *Goldbach.*
Hy. Honegger, *Wollishofen.*
J. Kaegi-Fierz, *Kussnacht.*
J. J. Burgi, *Zurich.*

These silks are not sent to the exhibition as productions of art, but to show that plain silk goods can be made in Switzerland at a cheap rate, and that, with regard to quality and finish, they are equal in every respect to those of other countries.

154 ALIOTH, T. S., & Co., *Basle*—Inventors.

Samples of spun silk, called "schappe sublime," first quality, in warp and woof, for foulards, damask silk and wool, &c.

The materials employed are silk wastes, called "struin" in Italy, "moresques" in Piedmont, and "frisons" in France.

155 LOTZ, FREDERIC; WEGNER, T. R.; MULLER, HAUSER, ; ROMAIN, jun., *Bâle*—Silk-dyers.

Specimens of different shades of silk.

156 BAENZIGER, KOLP, & Co., *Ebnat, St. Gall*—Producers.

Madras handkerchiefs. Saxonies. Checks and stripes. Ginghams.

157 **Bischoff, Christ. John**—Manufacturer.

Fine black satin. Gros du Rhin. Serge.

158 **Boelger, Marc**, *Bâle*—Manufacturer.

Specimens of spun silk, first quality; warp for furniture stuffs, woof for half-silk stuffs.

159 **Cuendet, Adeline**, *Geneva*.

Scarf (points de Genéve).

160 **Mueller, T. B., & Co.**, *Wyl, near St. Gall*—Manufacturers.

Handkerchiefs of various colours, simple and mixed. Romals, ordinary quality.

Shawls jacquard, damasked, double warp, various colours, &c.

Tartans, differently coloured. Scarfs, various colours.

Ginghams, of different qualities and colours.

Cachemirienne croisée, different coloured checks, lustred, &c. "Coretny" satins, red ground, façonné stripes, high lustred stiffening.

Moreas, first qualities, different stripes and colours.

Demi-cottons. "Coretny" jacquard. "Hacking" Jacquard, style, gold stripes. Jaconet worked.

161 **Ryhiner & Sons**, *Bâle*—Manufacturers.

Machine-spun silk, made of silk waste, for silk and worsted damask, handkerchiefs, gloves, &c.

162 **Von der Muehl Brothers**, *Basle*—Manufacturers.

Gros de Naples, four qualities. Serge. Taffetas. Gros de Rhine.

163 **Beck & Sons, Miescher & Sons, Fankhauser Brothers, Schmid Brothers**, *Berne, Berthoud, and Eriswyl, Canton of Berne*—Manufacturers.

White linen, prepared and without preparation; white linen, extra thick; white linen pocket handkerchiefs.

Bleached table linen, with designs; assortment of 24 table napkins and table cloths; washing towels, all linen.

Drill tick, unbleached; cotton and linen tick, intermixed.

[Hemp is cultivated throughout Switzerland, and flax principally in the Cantons of Berne and Argovie. Flax mechanically woven, is a modern invention, of which there are only three establishments, those of Berne, St. Gall, and Zurich.

Belgium, France, and the Zollverein States, export annually to Switzerland, hemp and flax thread, to a considerable amount, and the total imports, taking a mean year, from abroad, is 1,500 quintals. The flax and hemp linen of Switzerland enjoys a deservedly high reputation. —D.C.]

164 **Haag & Son**, *Libefeld, near Berne*—Manufacturers.

Samples of linen.

165 **Hanselmann, Joachim**, *Güttingen, Canton of Thurgovie*—Manufacturer.

Morning jacket of fine Thurgovie linen. The manufacture of this article occupied the exhibitor from 600 to 700 days.

166 **Hunziker & Co.**, *Aarau, Canton of Argovie*—Manufacturers.

Coutils, linen and cotton; toiles du nord, linen and cotton; cotonades; coutils, cotton; ginghams; handkerchiefs.

167 **Miescher & Co.**, *Berthoud, Canton of Berne*—Manufacturers.

Sewing thread.

168 **Raschle & Co.**, *Wattwil, Canton of St. Gall*—Manufacturers.

Handkerchiefs:—Veronas, Madras, Indian, paillacats, mazzulipatams.

Cottonets, caranclanes; the same, Modenchelasse, ginghams, jacquard, mochares, cambrics, "lapetz," "ghulmess."

169 **Roethlisberger & Sons**, *Walkringen, near Berne*—Manufacturers.

Bleached washing towels, table cloth, table linen, and table napkins.

Bleached linen, without preparation, for shirts and for bed linen.

Pocket handkerchiefs; linen drill, cotton and thread intermixed.

170 **Reymond, —, jun.**, *Morges*—Manufacturer.

Diapered skins. Articles of a currier's shop.

Calf-skin polished. Calf-skin part polished, part in white.

171 **Gissiger, Victor**, *Laufeu, near Bâle*—Manufacturer.

Dressed hides, black and brown, for harness, bridle, pouches, &c.

Curried shoe-hides; dressed hide, for coaches; calf-skins, russed; calf-skins, blacked or French-curried.

172 **Hauser, J. de J.**, *Waedenschwyl, Canton of Zurich*—Manufacturer.

Ox-hide, for sole leather, tanned with oak tan; exhibited for compactness and solidity.

173 **Imhof, Melchior, & Sons**, *Bâle*—Manufacturers.

Sole leather:—half hide of ordinary condition; the same, prepared or beaten; tanned from a raw ox-hide, in an improved manner, with oak bark: exhibited for consistency, impermeability, and solidity.

Calf-skins, black for shoemakers; French blacked and rounded; russed, for shoemakers; and French blacked.

Fine calf-skins, French blacked, for legs of boots, and for upper leather of boots.

Tanned goat-skins, with the hair.

174 **Kappeler, Frederic**, *Frauenfeld, Canton of Thurgovie*—Manufacturer.

Half cow-hide, for sole leather, tanned.

175 **Mercier, Jean Jaques**, *Lausanne, Canton of Vaud*—Manufacturer.

Calf-skins: tanned; tanned and curried; and tanned, curried, and blacked.

Morocco leathers; boot-legs, fronts and backs.

Chamois calf-skins and chamois sheep-skins, of various colours.

176 **Meyer & Ammann**, *Winterthur, Canton of Zurich*—Manufacturers.

Calf-skin for cylinders. Grey and green calf-skin, for bookbinders.

Morocco, shagreened, red, violet, green, brown, and black.

Morocco, quarré red, violet, grey, and green.

Sheep-skin, of various kinds and colours.

177 **Mueller & Co.**, *Aarau, Canton of Argovie*—Manufacturers.

Calf-skins, curried, tanned, and "rounded." Calf-skins, blacked, waxed, and rounded.

178 **Raichlen, Louis**, *Geneva*—Manufacturer.

Cow-hide, strong sole leather. Cow-hide, strong white leather, for bands.

Curried calf-skins, black, and boot-fronts. The leather is exhibited for tenacity, compactness, and firmness.

179 **Resseguеire, C.**, *Geneva*—Manufacturer.

Curried calf-skins, black, white, and japanned.

Cordovan, dyed in various colours.
Kid leather, dressed for gloves.

180 Schalch, A., *Schaffhausen*—Manufacturer.
Black English skins, for ladies' shoes.
Goat-skins, blue, violet, and red, for bookbinders.
Fine parchment, for writing and printing. Fine calf-skins, for miniature painting, &c.

181 Spengler, H., *Hasli, Canton of Thurgovie*—Manufacturer.
Cow-hide, for sole leather, tanned.

182 Thurneisen, —, *Bâle*—Manufacturer.
Superfine large eagle paper, for prints and lithography, exhibited for finish and transparency, with thickness.

183 Steinlin, Felix, *on the Sihl, City of Zurich*—Manufacturer.
Letter and writing paper, superfine, fine, common, coloured, and with marks.
Common coloured wrapper paper.
Pasteboard, thick and thin, white and coloured.
Silk paper, white and coloured.
Paper for drawing, tracing, lithography, and copper-plate.
Writing books, and music paper.
Printing, packing, and other papers.

[Switzerland possesses about fifty paper and card manufactories, which are distributed through eighteen cantons. Zurich, Neufchâtel, Vaud, and Geneva, manufacture about 30,000 quintals annually. The finer papers are imported from France, Germany, England, and Holland. They export to America and the Zollverein States.

The manufacture of stained paper exists only in three cantons, viz., Zurich, Bâle, and Vaud. About 3,000 quintals are annually imported from Germany and France.

Switzerland, in comparison with her population, possesses a great number of printing and bookselling establishments. The towns of Bâle, Zurich, Geneva, Aarau, Schaffhausen, and St. Gall, have been celebrated in the annals of printing, and export a great number of books; unfortunately the French heavy duties limit, in a great measure, this branch of commerce, notwithstanding that Switzerland purchases a considerable number of works imported from France. There are numerous engraving, printing, and lithographic establishments in this country. —D. C.]

184 Bontems, Charles, *Geneva.*
Box containing dyed black silk for sewing.

185 Hug-Ith, *Schaffhausen*—Importer.
Scarlet cloth, purchased by the exhibitor in Silesia, in its natural colour, and dyed at Schaffhausen.

186 Sulzer, Graf, *Winterthur, Canton of Zurich.*
"Moreas à flamines. Coutnys à flames satiné."

187 Sulzer, Henry, *Adorf, Canton of Thurgovie*—Manufacturer.
Calicoes of various descriptions, plain and ornamented.

[Switzerland ranks next to England, in comparison with the number of her population, in the production of woven and spun cotton; it is likewise one of the countries that consumes the most. The production has rapidly increased during a period of thirty years, without any protective duties, and notwithstanding the heavy and severe imposts imposed by surrounding neighbours, on the importation of cotton manufactures. This prosperity is due to the abundance of moving power in every part of the country, the concentration of the population, and her great energy, intelligence, and industrial genius.

Switzerland possesses about 131 looms, which put in motion more than 950,000 spindles; she manufactures all the numbers, up to number 250 (English). The Canton of Zurich is the principal seat of this manufacture. The number of factories here amount to 70, while that of the Canton of Argovie has only 20.

Switzerland is one of the greatest consumers of spun and wove cotton; the annual consumption is reckoned about 3lbs. weight per inhabitant. Mechanical weaving is increasing yearly, principally in the Cantons of Zurich, Berne, Schweitz, Glaris, Bâle, St. Gall, Argovie, and Thurgovie; there are likewise a considerable number of hand-weaving machines. The Canton of Zurich alone reckons more than 20,000 weavers, who annually manufacture more than a million pieces of cotton, of various qualities, at a very low price. There are more than 250 bleaching establishments, the greatest number of which are in the Cantons of Berne, Appenzell, St. Gall, and Argovie. The purity, excellency, and abundance of the water is of great advantage to these establishments, as well as to dyers.—D. C.]

188 Baenziger, John, *Thal, near St. Gall*—Manufacturer.
Specimens of needlework, viz.: robe, cape, collars, on muslin and jaconet; caps, on the same; short sleeves.
Embroidery on lace, viz.: scarf; robe; mantle; long and short sleeves; collars; high chemisette; the same with collar; ladies' caps, cuffs, and shawl.
Handkerchief, on French cambric, with lace border.
Tambour needlework, viz.: short sleeves; ladies' cap; collar; habit-shirts, and cape; morning dress on jaconet; robe on muslin.
Plain muslins and plain jaconet.

189 Depierre Brothers, *Heiden, Canton of Appenzell, near St. Gall*—Manufacturers.
Specimens of artistic embroidery: a flower basket, needle embroidery, on Mechlin tulle.
Straw bonnet embroidery, made with the needle, on black tulle. The same on white tulle.
Small veils, on white and black tulle.
Cambric handkerchief (*plumbf et points pont d'armes*), satin stitch. The quality of this work is to be estimated by the difficulty of producing the effects of light and shade on Mechlin tulle, and with fine cotton. This article is new, and made by young women who have no knowledge of drawing.

[The manufacture of lace goods is of minor importance in this country. The principal lace factories are those of Neufchâtel, Vaud, Berne, Schwitz, Thurgovie, St. Gall, Appenzell, Aarau, &c. The Canton of Neufchâtel employs more than 3,500 females in hand-embroidery; but this branch of the trade is principally carried on in the eastern parts of Switzerland, where manual labour is extremely cheap.—D. C.]

190 Eugster Brothers, *Speicher, Canton of Appenzell*—Manufacturers.
Muslin curtain, ground embroidered in crochet. The same with net ground.
Curtains, embroidered, with net application, and with muslin ground, long stitch.

191 Ehrenzeller, Ferdinand, *St. Gall*—Importer.
Sets of six curtains, each set embroidered as follows: tambour on net; longpoint and appliqué on net, and on guipure net; the same on muslin, with net; and appliqué with net. Produced at the Embroideries of Mr. J. Baenziger, at Thal.

192 Fisch Brothers, *Buehler, Canton of Appenzell*—Manufacturers.

Muslin dress, embroidered in colours, and white.

Curtains, of net embroidered, white.

Pair of white net curtains.

193 Forster, J. D., *Ober-Utzwyl, St. Gall*—Manufacturer.

Muslin robes, worked with silk, in columns à jour, &c.; the same, worked with straw.

Gauze, simple; gauze, with corders, and straw work; gauze, worked à jour; jaconet, worked, and in columns.

Gauze shawl, worked with the needle; muslin shawl, with silk; balzarine, in colours.

Shawl, with silk flowers, &c.; shawl, cotton muslin.

194 Herrmann, Frederic, *Diessenhosen, Thurgovie*—Manufacturer.

American carpet stuffs; American bed carpet; piece of printed calicoes.

The American bed carpet is exhibited for its size and difficulty of manufacture.

195 Holderegger, Christian, *St. Gall, Canton of St. Gall*—Manufacturer.

Curtains, embroidered on muslin and tulle; curtains, embroidered on the same, and application; also, guipure application, and long point.

Ramage tulle application, and long point of laine, coloured; guipure application, embroidered.

196 Koellreutter, Felix, *St. Gall*—Manufacturer.

Specimens of cotton embroidery on muslin collar, chemisette, mantille garnie; and ornamented with flowers. Handkerchief, embroidery on batiste.

197 Mettler & Son, *Hemberg, Canton of St. Gall*—Manufacturers.

Ginghams. Jaconets. Toiles du nord. Robes. Muslins. Cravats. Handkerchiefs. Shawls.

198 Nef, J. J., *Herisau, Canton of Appenzell*—Manufacturer.

Swiss muslin. Tamboured gauze balzorine; tamboured nainzook. Striped gauze.

Figured muslin (imitation of needlework), exhibited for the fineness of the ground and the figures, which equal needlework

Figured insertion on bishop-lawn (imitation needlework).

199 Pauly, Gustave & Auguste, *Canton St. Gall*—Manufacturers.

Embroidered collar, tamboured; and chemisette.

Pelerine, exhibiting improved tamboured embroidery.

200 Schiess, Emanuel, *Herisau, Canton of Appenzell*—Manufacturer.

Veil of cambric needle-work.

201 Schlaepfer, Schlatter, & Kursteiner, *St. Gall*—Manufacturers.

Lace and muslin curtains, white needlework.

Muslin dress, of coloured needlework and chenille, and two lace veils. Tarlatan.

Muslin from the loom, white jacquard, needlework spots.

Shawls with needle-work and fringes; shawls with lace ground and needlework; shawls ornamented by needlework in wool, cotton, &c.; shawls with muslin Jacquard stripes.

202 Schoch, Schiess, & Son, *Herisau, Canton of Appenzell*—Manufacturers.

Samples of fine embroidery—Handkerchiefs, embroidered on cambric; embroidered handkerchiefs, ornamented with lace and insertions. Collar, embroidered on muslin.

203 Sutter, J. J., *Bühler, Canton of Appenzell*—Manufacturer.

Curtains, muslin and net embroidered.

Ladies' dresses, white embroidery, coloured wool, and silk.

Handkerchiefs, French cambric, embroidered with coloured wool:—portrait of the Queen of England, views, &c., exhibited for difficulty of execution. Handkerchiefs embroidered with human air.

Collar, with embroidery, &c. Pelerine mantelets.

204 Tanner, B., *St. Gall*—Manufacturer.

Embroidered muslins (cotton).

205 Tanner, John Ulrick, *Bühler, Canton of Appenzell*—Manufacturer.

Silk pocket-handkerchiefs, embroidered in cotton with portraits, &c.

Curtain, table-cloth, or bed-cover, muslin and silk, embroidered in cotton, representing William Tell and the arms of the twenty-two cantons of Switzerland: specimen of every kind of embroidery.

Transparent silk, representing the female embroiderer while working the preceding, with several landscapes of the country and the dwelling-place of the manufacturer.

Picture of silk, worked in cotton and coloured silk, from nature. Curtain of net, embroidered; muslin curtains, embroidered.

Bed-cover of net muslin, embroidered.

Dress of raw silk, embroidered and coloured in silk, &c.

Dress of muslin, embroidered and coloured in cotton, wool, silk, gold, with feathers and pearls.

Dress of muslin, embroidered with net.

206 Tanner & Koller, *Herisau, Canton of Appenzell*—Manufacturers.

Embroidered muslin tambour-work, and muslin scarfs, dresses, and shawls, manufactured by Jacques Zeller, at Teufen.

Muslin dresses. Jaconet petticoats.

Shawls, jacquard brocaded on gauze, with fringes; spotted on muslin; manufactured by F. F. Diem, Herisau.

Muslin robes, with gherl flounces, and tucks.

Embroidered muslin robe; the same, with border and flounces.

Embroidered muslin shawl, long-stitch and tambour-work; and handkerchief on French jaconet.

Embroidered muslin curtain, representing all sorts of white and coloured embroidery; subject, "Helvetia," with analogous allegories, and the arms of the twenty-two cantons.

Embroidered muslin robes, long-stitch and tambour-work, with berthe, &c., manufactured by L. Gonzenbach, Högger, St. Gall.

White spotted muslins (*petits pois*), bouquets, ramages, &c.

207 Waldburger & Langenegger, *Bühler, Canton of Appenzell*—Manufacturers.

Embroidered robes of clear silk, and of clear gauze-silk. Perfectly specimens of the manufacture of Switzerland; the silk is obtained in the country of St. Gall and Appenzell: the weaving has been executed by John Waldburger, in Bühler, and the embroidery by Mrs. E. Langenegger, at Gais.

208 Staeheli-Wild, C., *St. Gall*—Manufacturer.

Table-cloth, or bed-cover, superfine embroidery.

Another, the same design, in fine long-stitch; the price of this last is only the fifth of the first.

Curtains, muslin, white embroidered.

Handkerchief, French cambric, &c.

Net-white embroidery. Muslin. Collar on French cambric; and on muslin, fine embroidery and long-stitch.

Insertions on muslin. Gentleman's shirt and waistcoat on French cambric. All designed by Mr. Herrman Schatter, at St. Gall.

209 **Zuppinger, Theodor**, *Maennedorf, Canton of Zurich*—Inventor.

Carpet of new velvet, woven.

210 **Bally & Co.**, *Schoenenwerd, Canton of Soleure*—Manufacturers.

Braces, elastic and non-elastic, cotton, and half silk.

211 **Dietiker, J.**, *Berne*—Manufacturer.

Japanned leather boots, the legs of red morocco.

212 **Frey, T. F. & T.**, *Aarau, Canton of Argovie*—Manufacturers.

Common cotton and elastic braces; middling and fine braces; half silk and half cotton elastic braces and garters. Half silk and half cotton fancy elastic braces. Elastic cotton belts.

213 **Isler & Otto**, *Wildegg, Canton of Argovie*—Manufacturers.

Laces, a new use of straw-haulms as raw material; peculiar in combination of colour and pattern; for ladies' bonnets and pasteboard work. Trimming, exhibited for novelty of design, material, and workmanship.

214 **Lecoultre Brothers**, *Brassus, Vaud.*

Razors, à sonnettes. Razors with two, with four, and with six blades.

215 **Lecoultre, James**, *Sentier, Canton of Vaud.*

Razor, with six spare blades, with back and a case. Razors, with six, four, and two blades, without backs. Razors, with single blades.

216 **Graeser & Schweizer**, *Rheinau, Canton of Zurich*—Manufacturers.

Metallic cloth, employed in paper manufactures. Iron wire flower-pot, for ornamental use.

217 **Scheitlin, Henry & David**, *Canton of St. Gall*—Manufacturers.

Buttons for coats. Buttons for ladies. Umbrella, curtain, and boddice rings.

218 **Schopfer, Samuel**, *Gessnay, Canton of Berne*—Founder.

Cow bells.

[The principal care of the Swiss husbandman is his herd of cows, which are of a peculiar and excellent breed, and supply a large daily proportion of milk, yielding a quantity of cheese. These cows, pasturing among the mountains, are supplied with bells, for their more ready discovery. Large quantities of cheese are exported to England and other countries. It has been calculated that there are 800,000 cattle in Switzerland.—R.E.]

219 **Dutertre, Augustus**, *Geneva.*

Gold pocket-book. Gold cigar-case, with enamel and painting, and a watch attached.

Gold money-case, with enamel and a watch.

Gold ring, and bracelet with jewels and watch.

Gold walking-stick head, with mechanism.

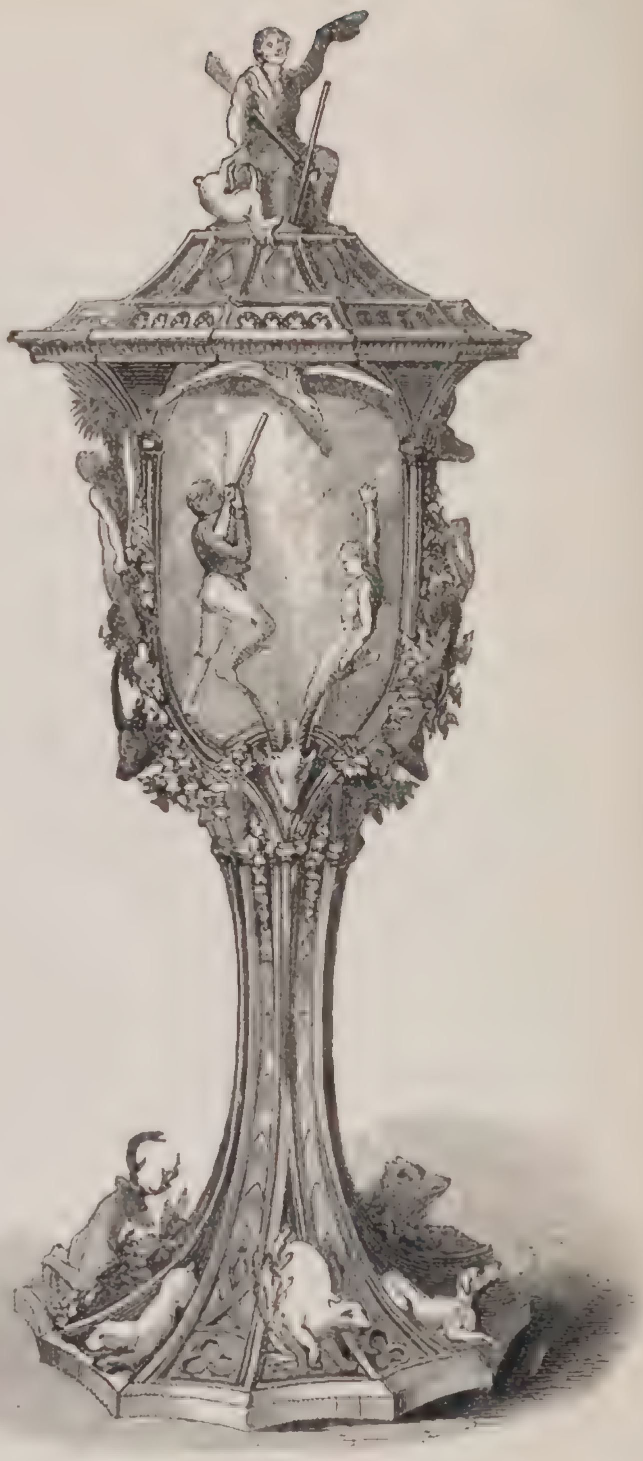
220 **Golay, Leresche**, *Geneva.*

Gold souvenir, with a small watch, under an enamelled painting—subject, "The wilful little boy." On the other side is a landscape, representing a lake of the high Alps, from the original of Calame, with place for a portrait or hair.

221 **Fries, Henry**, *Canton of Zurich*—Designer and Manufacturer.

Embossed drinking-cup.

This cup, the design of which represents Alpine pursuits, is represented in the annexed cut.



Fries' Embossed Drinking Cup.

222 **Massy, John Francis**, *Sentier, Canton of Vaud.*

Sundry imitative gems of various kinds.

223 **Veret, James**, *Nyon, Canton of Vaud.*

Crystal of quartz in its natural state.

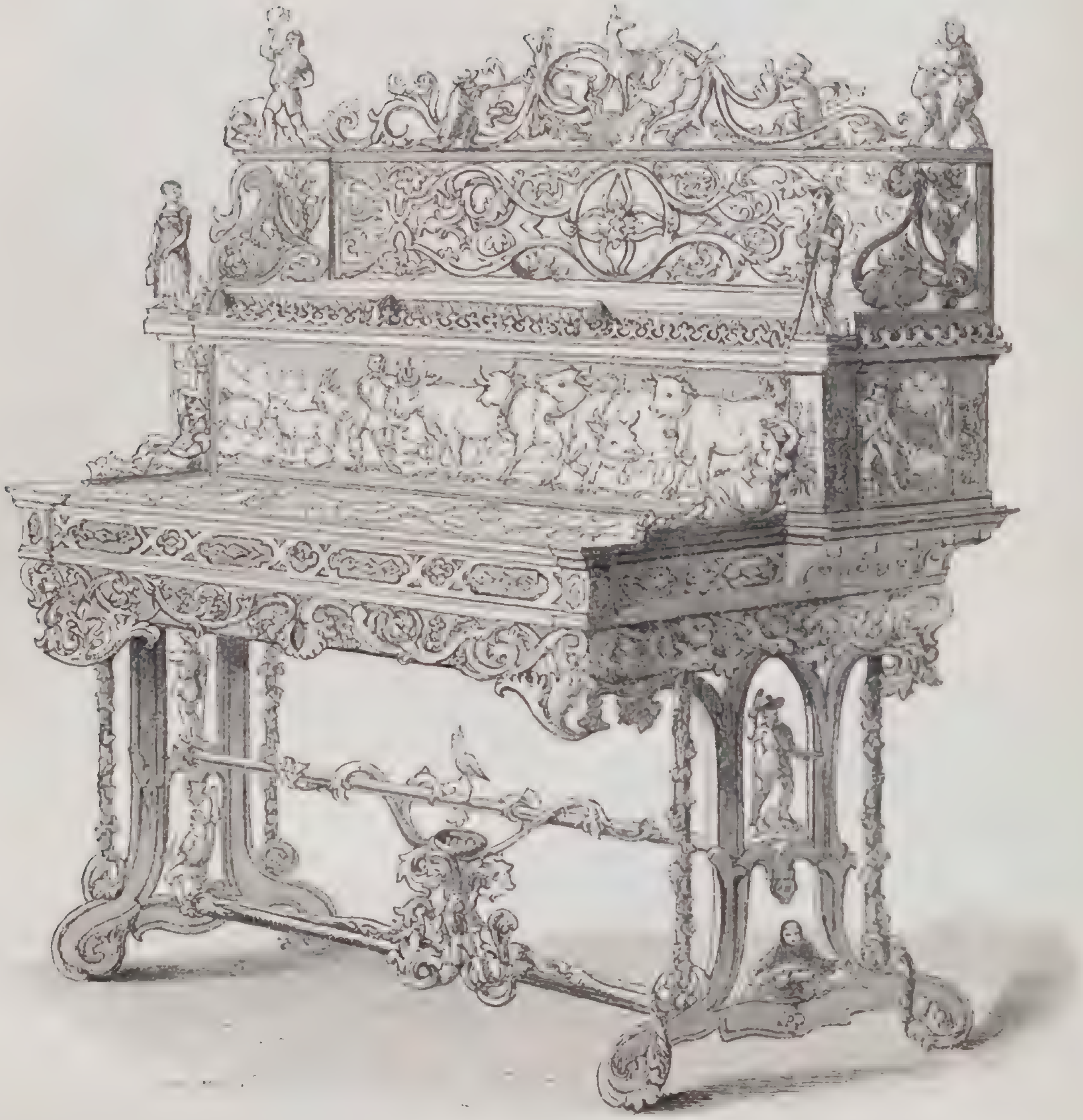
Topaz, produced from quartz by a peculiar process.

Topaz, obtained by the same process, set in a breast-pin, on gold-leaf.

[Quartz crystals are not unfrequently made the means of imitating certain gems, by partially colouring or tinting them with various metallic oxides; but the usual mode of manufacturing imitative precious stones of all kinds is by means of a kind of glass, called technically "paste," and composed of pounded rock crystal, melted with alkaline salts, and coloured with metallic oxides.—D. T. A.]

224 **Fluekk, John**, *Brienz, Canton of Berne*—Manufacturer.

Table of maple-wood.



43. LADY'S WRITING TABLE. M. L. WETBY.

225 MEYSTRE, EDWARD, *Lausanne*.

Two turned cups and a turned watch-stand, made of maple-wood, without assistance, by a pupil of the Asylum for the Blind at Lausanne.

226 VOGEL, ANTOINE, *Thoune, Canton of Berne*—Manufacturer.

Round table, made of twenty-eight different kinds of wood, inlaid with 38,000 pieces, arranged in eight different ways.

227 ABT BROTHERS, *Buenzen*, BRUGGISSER & Co., DUBLER & SONS, GEISSMANN & Co., ISLER, J., jun.; ISLER, J., & Co.; ISLER, J., & SON; MEYER BROTHERS; WOHLER & Co., *Wohlen, Canton of Argovie*—Manufacturers.

Twisted straw. Cordonnet. Plaits. Porsades.

Willow (chip). Willow plaits (chip).

Horsehair plaits. Figured coronet. Torsave plaits. Manilla plaits.

Plaited laces (trimmings). Bonnets Coffs (trimmings), large and small.

Feathers for bonnets. Trimmings. Flowers. Tissus (only patterns). Bonnets, three parts.

Bags. Cigar boxes. Bell ring. Slippers. Sportsman's pouch. Carpet.

[The straw trade occupies about 40,000 persons: a portion work at the factories, but the greater number at home. The straw is of home production, embroidered, and mixed with silk, thread, horse-hair, &c. The more important factories of this material are in the Cantons of Argovie, Thurgovie, Appenzell, and St. Gall. The Canton of Fribourg is more especially confined to the manufacture of straw hats and bonnets. They export to almost every country, and the articles of this manufacture are highly appreciated for their beauty and low price.—D. C.]

228 CLARAZ, AMBROISE, *Fribourg*—Manufacturer.

Specimens of flowers, plumes, and wreathes, made of straw, for trimming bonnets.

Fashionable and fancy straw bonnets.

Plaits, and a variety of fancy articles of straw for bonnets and trimmings.

229 FAESSLER, JOHN A., *Appenzell*—Manufacturer.

Milk tubs in miniature, of the fittest form for carrying milk.

230 HARTMANN, LOUIS, & Co., *Fribourg*—Manufacturers.

Stalks of wheat grown in the canton of Fribourg, prepared for straw plaiting. Split straw for plaiting.

Pieces of plaiting with seven ends, single; with fifteen ends, single; and with fourteen ends, double: prepared by the plaiting women.

Piece of fancy plaiting, coloured, thirty ends, double and prepared for sewing.

Ladies' bonnets, common and fancy plaiting.

231 HURTER & BUHOLZER, *Lucerne*—Manufacturers.

Horse-hair (double and single) tress.

232 LENDENMANN, J. CONRAD, *Grub, Canton of Appenzell*—Manufacturer.

Printers' rollers, made of "Swiss imitation caoutchouc," a composition, invented by the exhibitor; it is elastic, tough, soluble in water, and soft, and capable of adaptation to different temperatures. In cylindrical forms it is used in printing for applying the ink. The rollers marked A are suited to moist offices; B, to places of moderate temperature; C, to dry air. For a considerable time the composition is softer than is necessary for immediate use. The axis is of iron, to prevent curving.

233 PIECE, LOUISA, *Geneva*.

Caoutchouc knit-stocking for invalids.

234 SULZBERGER & AKERMANN, *Meisterschwanden, Canton of Argovie*—Manufacturers.

Horse-hair and silk lace. Lace made of Ostindian hemp, horse-hair and silk. Horse-hair and straw blonde lace. Straw and silk lace. Straw, Ostindian hemp, and silk lace.

Specimen of cabas, cigar-cases, tassels, and sundry straw ornaments. Coloured tresses of Ostindian hemp and silk.

Straw rope, coarse and fine. Twist straw. Tresses of Indian hemp and silk. Bleached straw produced by a new bleaching process; bleached wood.

Horse-hair tress, double. Tresses of straw and horse-hair. Tress of Indian hemp and silk; and of straw and silk. Straw and wood.

235 BAATARD, JOHN ANDREW, *Lausanne*.

Plated work-box, with mahogany wood and steps.

236 BAUTTE, T. F., *Geneva*—Manufacturer.

Presse-papier, in gold-enamelled rococo style; the base ornamented with painted views, representing three Swiss scenes and one of Naples; groups of flowers, painted in enamel upon gold, with a mechanical singing bird.

237 WETTLI, MICHEL L., *Berne*—Manufacturer.

Lady's mechanical escrutoire, of white wood, constructed in such a manner as to enable the person to write either in a sitting or standing posture. It comprises seventeen drawers, all of which are locked with the same key. The lower part, used for writing in a sitting posture, is provided with a peculiar kind of mechanism, so that by pulling the drawer the upper part of it disappears to make room for the operation.

This escrutoire is represented in the Plate 43.

Carved work, representing the rustic economy and Alpine life of the inhabitants of Switzerland.

238 FLUEKK, ELIZABETH, *Brienz, Canton of Berne*—Manufacturer.

Lady's work-basket, carved in maple-wood.

239 BAUMANN, ANDRE, *Brienz, Canton of Berne*—Carver.

Four-cornered box, in white wood; the carving on the cover, which is made out of a single piece of wood, represents the Alpine rose.

A box made of yew-tree wood, of an oblong form; the carving on the cover is an imitation of the garden rose and a garland of flowers.

Small four-cornered box, made of yew-tree wood, inlaid with white wood, with similar ornaments.

240 CHENEVARD, LEWIS, *Geneva*.

Enamelled map of the islands of Great Britain: illustrating an application of enamelled painting to the improvements of maps.

241 HESS, LEONARD, *Au Jeu de l'Arc, Geneva*—Painter.

Enamels. Crawfish-monger. Portrait, after Netscher.

Young Beggar, after Murillo. The Card-player, after Julius David.

Jane of Arragon, after Raphael. The Bride of Lammermoor, after Tony Johanot. Fancy head.

The Guardian Angel, after Decaisne. Portrait, after Voys.

Venus and Cupid, after Titian.

[The colours used for enamel painting have all a metallic base; the reds being made from the oxide of gold, greens from copper, yellows from lead, blues from cobalt, &c.—J. H.]

242 Kehrli Brothers, *Schwendi, near Meyringen, Canton of Berne.*

Box-wood salad spoon and fork; the same, with the words "La Suisse." Ruler. Drinking-cup for children.

Nut-crackers, ornamented with vine-leaves, roses, a dragon, and a crocodile. Folder, handle of chamois-horns, &c.

Knitting-needle case. Match-box. Pin-case. Boat-hooks, &c.

Painted plate, sculptured by Daniel Wœgelin, in Thoune.

243 Kessler, Nicolas, *Fribourg*—Designer and Carver.

Statue representing Father Girard (Franciscan friar); designed by the artist, and carved in chestnut-wood.

244 Klarer, Josephus Anton, *Appenzell, Canton of Appenzell.*

Ornament, or jewel-case, of nut-tree wood. The cover represents three figures, in the costume of the canton of Appenzell, and the arms of the twenty-two cantons of Switzerland. The four sides of the case represent—The Grütli Oath, a group of seven figures, including William Tell and his son; Tell's shot (five figures); the debates of the federal authorities concerning the money-bill, and various other representations of Swiss characters and events.

245 Lombard, Alexander Charles, *Geneva*—Inventor and Producer.

Five enamels:—Miniature pocket-compass, with face painted in enamel; on the cover is an enamel portrait of Admiral Nelson.

Mourning dial, with a small carved second-hand in the black part, bearing various inscriptions.

Turkish calendar-dial, divided into five parts—a large dial-compass (*tom d'heures*); monthly calendar; annual calendar; a small second hand, with the names of numbers in Turkish type.

Chinese dial, with its dial-compass representing twenty-four hours, divided into eight quarters, each hour having 120 minutes.

Romish dial, with a perpetual yearly calendar.

[Many eminent artists, sculptors, and engravers, reside in the principal towns of Switzerland, where they find considerable occupation. A great number of designers are employed by the cotton manufacturers; and in the Cantons of Geneva and Neufchâtel are numerous workshops for the engraving of boxes, watch-cases, and jewellery. Numerous enamel-painters find employment in Geneva, chiefly in the watch-case and jewellery department. The Society of Arts founded in this town public schools for architectural and ornamental drawing, engraving, modelling, &c. Medals of a large size are struck at Geneva. —D. C.]

246 Hallmeyer-Appenzeller, Anette, *St. Gall*—Manufacturer.

Chimney-screen, with landscape: a view of Meyringen, in the Oberland of Berne. The composition is a combination of the plastic art with that of the maker of artificial flowers. The glacier in the back-ground has been painted in oil, to give effect to the picture.

247 Mezener, John, *Jaun, near Meyringen, Canton of Berne.*

Group of ten chamois and huntsman, on a hill.

248 Michel, Gaspard, *Brienz, Canton of Berne*—Carver.

Peasant's farm-house in the Bernese Oberland, with its dependencies. By removing the roof, the interior, even to the cellar, is exposed to view, with the furniture, &c.

249 Dufaux, Orgelet, *Geneva.*

Full-length portrait of Her Majesty Queen Victoria; painted in enamel, from the engraving by Cousins, after the original by Chalon. Painted with new colours, made in Geneva, by Mr. Louis Dufaux, sen.

250 Schild, J., *Brienz, Canton of Berne*—Carver.

Carved table. Bernese peasant's habitation.

251 Schæck, Madame, *Geneva.*

Paintings on alabaster, whitened and hardened for brooches and other articles of jewellery; covers of chests, boxes, and paper weights.

252 Schoell, Charles A., *St. Gall*—Modeller.

Relievo of the mountains of Appenzell, size of 36 square feet. The artist has been commissioned by the government of St. Gall to make a model in relief of the canton according to the trigonometrical survey. The model includes a surface of about 130 square miles on the scale of $\frac{1}{8000}$, and represents Mount Saentis with its dependencies, with the minute details accurately represented. In the execution of this work, the artist made use of apparatus of his own invention, including the plastic substance of the relief, which is very durable and light. The colour of the relief is an imitation of the ruddy glow of evening.

[The mountains of the Alps are peculiarly adapted to give effect to relief maps and models, and have often been the subject of ingenuity like that shown by the above exhibitor. Such models well illustrate certain points in physical geography, and are therefore valuable for educational purposes. We owe to M. Bauerkeller the production of relievo plans, at prices calculated to bring them into general use.—D. T. A.]

253 Spalinger, John, *Schaffhausen.*

Album, with several woodcuts, executed by the exhibitor. The drawings were executed by several Swiss artists.

254 Stoetzner, Chr. F., & Co., *Schaffhausen*—Producers.

Galvano-typic plates. Ticket for recommendation to the Galvanic Institution; representation of two figures; title sheet to Swiss songs, composed and drawn by M. Bendel, Munich; portrait of General Maillardoz; and ticket, representing the four seasons.

The object of the galvano-typic plates is, to supply the place of woodcuts at a cheaper rate. The artist can draw his composition upon a plate prepared for the purpose, which, by means of a chemical process, can be filled in for printing, without the least alteration. The nature of this process has not yet been made public.

[We may fairly infer, that this process of galvanotype is of an analogous character to the glyphograph, and similar methods of electro-chemical deposit.—R. H.]

255 Jaun, T., *Meyringen, Canton of Berne*—Carver.

A group of nine chamois and huntsman, carved in maple wood.

256 Ueltschi, John, *Oberwyl, Canton of Berne*—Manufacturer.

Brooches, watch keys, shirt buttons, and rings, made of chamois horns.

257 Wyttenbach, Charles, *Berne*—Proprietor.

A relievo of the cathedral of Strasburg, executed in card-paper, by Julius Leemann, bookbinder and sculptor in Berne. Exhibited for ingenuity in the carving of the galleries and the ogives, as well as in the principal ornaments.

The whole of this imitation of the master-piece of Ervin de Steinbach, was executed with a penknife by the artist, a working bookbinder, who was employed on it incessantly for three years.

258 Leemann, Jules, *Berne*—Carver.

A model, representing the fountain erected on the market place at Nuremberg, in Bavaria (scale 1 foot to 30 feet). This monument, which is remarkable for the simplicity and beauty of its composition, and for the style and finish of the work, was begun in the year 1355, and completed in 1361, by the celebrated masons George and Frederic Rupruht (brothers); the figures were executed by Sebald Schonhofes, a celebrated statuary. The figures surrounding the pyramid represent eight prophets of the Old Testament. The sixteen figures placed lower are those of heroes of different times and religions, and the seven electorate princes. The other eight figures, in a sitting posture around the basin are those of some celebrated ecclesiastical dignitaries.

259 Wirtz, John, *Berne*—Painter.

A table in white wood, representing a view of the chapel of William Tell, and the different costumes of the twenty-two cantons.

A table in dark wood, with a view of the Handekfall.

A desk in white wood, with a view of the Siessbach.

Letter-bag, with view of the Wengeralp.

Salad spoons and forks, with views and costumes.

Scissors, folders, pocket-books, card-cases, needle-cases, &c.

Painted eggs in wood; egg cups. Tassels for books. Sweatmeat boxes. Porte-monnaie cases for pens, cigars, fans, &c.

260 Ziegler-Pellis, James, *Winterthur, Canton of Zurich*—Manufacturer.

Divers articles of pottery ware, raw and glazed. The large pieces are exhibited for fineness and exactness in the expression of the medallions, the strength and density of the pipes, the excellence of the glaze, which is without cracks or flaws, and the difficulty of execution in soft clay.

261 Geilinger Brothers, *Winterthur, Canton of Zurich.*

Yasmas, dyed and printed.

262 Lecoultre, Gustave, *Brassus, Canton of Vaud*—Manufacturer.

Razor with seven plates, ivory handle, case, and screw-driver.

Razor with three plates, and buffalo handle; of the same description: another with two plates, and another with one plate.

263 Lecoultre & Golay, *Brassus, Canton of Vaud*—Watchmaker.

Large movement with twenty teeth; another with sixteen teeth: one with twelve, four with eight, two with seven, and two with six teeth, fixed on a wheel.

264 Schuchmann, W., *Locle, Canton of Neufchâtel*—Engraver.

Two coins, engraved in steel; the one representing a group of two persons, the other the head of a warrior.

265 Fischer, Edward, *Chur, Canton of Granbundten*—Manufacturer.

A double American rifle with two barrels and only one trigger; the right barrel straight, the left with a half winding.

266 Piguet Brothers, *Sentier, Canton of Vaud*—Manufacturers.

A gold watch, enamel dial, duplex escapement, five rubies, maroquin case.

267 Paillard Brothers, E. A., *St. Croix, Canton of Vaud*—Manufacturers.

A gold watch, five rubies, portrait of the Queen of Holland, with diamonds.

A gold watch, five rubies, to wind up by the pendant.

268 Kramer, Augurt, *Locle, Canton of Neufchâtel*—Manufacturer.

A gold watch, enamel dial, independent seconds, and metal thermometer; twenty holes in rubies, compensation balance.

269 Schmid Brothers, *Thalweil, Canton of Zurich*—Manufacturers.

Silk handkerchiefs; the weaving, printing, finishing, and entire manufacture by the exhibitors: warp silk, woof samples of spun silk, called shappe sublime.

270 Burkhardt, James, *Zurzach, Canton of Argovie*—Manufacturer.

An assortment of improved razors and razor-straps.

271 Perret, C., *Chauxdefonds, Canton of Neufchâtel.*

Thread lace.

272 Gimper, G., *Canton of Zurich.*

Tooth-powder, soap, &c.

273 Piguet Brothers, *Sentiers, Canton de Vaud.*

Gold watches.

274 Patek, Philippe & Co. (late Patek & Co.), *Geneva*—Manufacturers and Inventors.

Assortment of watches, highly finished, forming a complete collection, with all the modern improvements, and various species of ornaments, including plain watches, repeaters, self-acting clock-work watches, tac' watches, intended for the blind; watches provided with independent seconds hands and date hands; also with insulated sea-compasses, spy-glasses, secret compartments, and extra plates; likewise watches called "à triple effet," capable of being transformed into three different shapes. The smallest watch ever constructed, the diameter of its works being no more than 3¾ lines, about 3-10ths of an English inch, &c. This watch is represented of its real size on the next page.

This collection contains common and repeating chronometers, tested and provided with official certificates from astronomical observatories.

Most of these watches are wound up and set without a key by means of a mechanism invented by the exhibitors, so simple and solid as to be applicable to any watch, even to those which have two main springs independent of one another. The same for exportation in the self-acting clock-work watches, and those provided with independent seconds hands. This invention, besides its great convenience, prevents the necessity of opening the watch, and excludes the dust or damp from the interior, where the oil, being less exposed to the action of the air, is much longer preserved.

Specimens of works not yet gilt, in order to exhibit the novelty of the manufacture and the products of the machinery and tools invented by the exhibitors.

The calibre of these watches is also devised and manufactured by the exhibitors, and every article is manufactured on the premises of the exhibitors relating to watches and chronometers, from the simplest to the most complicated, including engine-turning, engraving, chasing in relief, jewelling, and enamel painting in flowers, landscapes, portraits, and historical subjects.

Several of these watches, including tac', compass, and other watches, are represented in the cuts on the next page.

275 Stéche & Bonnet, *Geneva.*

A silver cup, with a trophy of arms.

276 Bovy Brothers, *Geneva.*

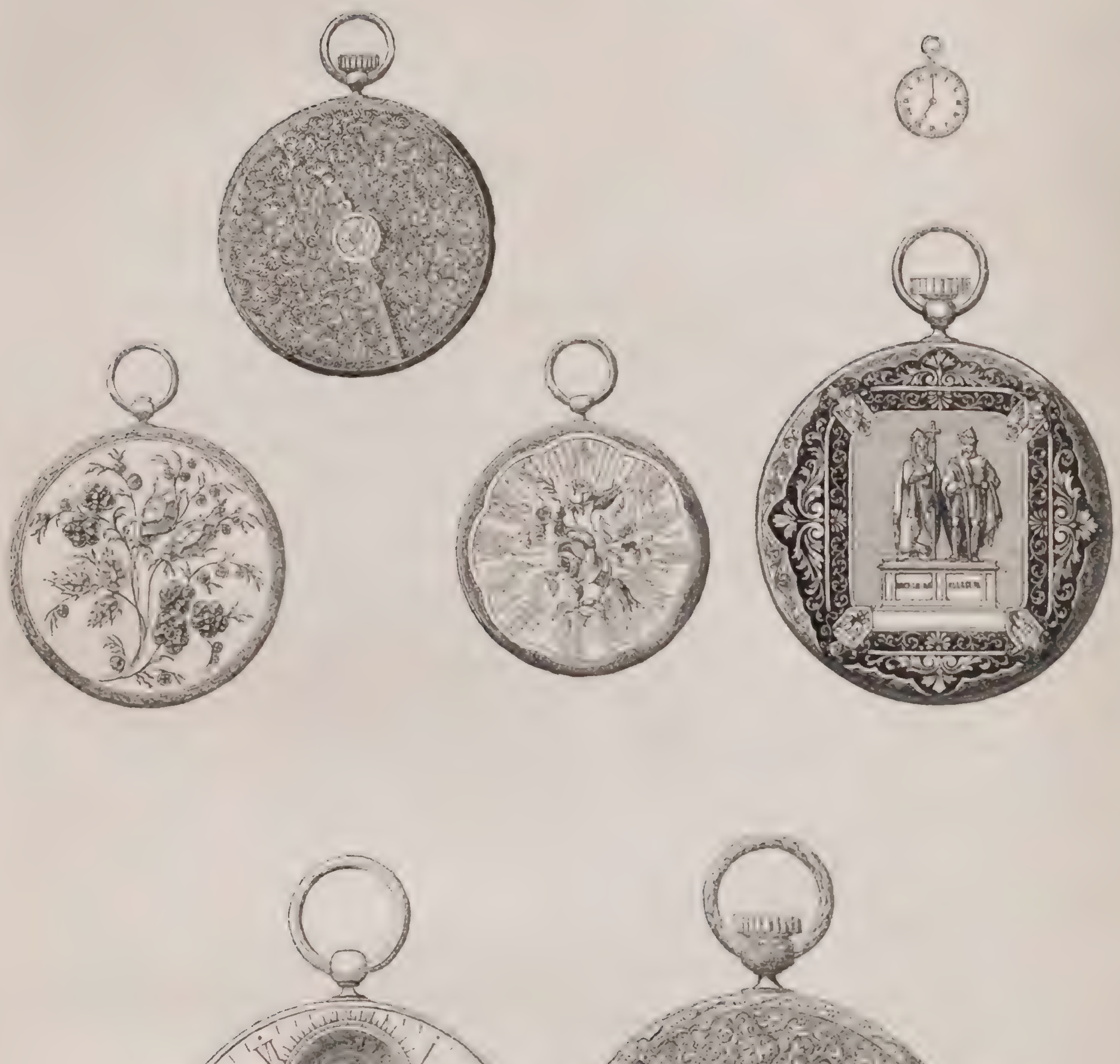
Fifteen medals in bronze, of which two are 4 inches in diameter.

277 Lachenal, *Geneva.*

Model of a new system, invented by Professor Colladon, of diminishing the friction in the single pin escapement.

278 Brouilhet, —, *Lausanne*—Manufacturer.

Gloves, of different sizes.



Messrs. Patek and Co.'s Watches.

PAPAL STATES

NORTH AREAS, G. H. 47.

Commissioner for the Roman Government, Signor CARLO TREBBI. *Agents*, J. and R. M'CRACKEN, 7 *Old Jewry*.

IT is deserving of notice, that in the Roman collection the first and last sections of the Exhibition are principally though not exclusively represented—the raw materials and sculptures, &c. Among the former are specimens of siliceous quartz, used for glassmaking; samples of asphalte, alum, &c. Some textile materials are also shown, such as hemp, silk, with samples of their manufacture; there is also a collection of papers made from flax and hemp. Specimens of bricks and tiles, in imitation of mosaic marble, are likewise exhibited. Among the fine arts, the sculptures, cameos in onyx and shell, and the beautiful mosaic-work, will receive much attention. The vases, candelabra, &c., form also attractive objects.—R. E.

1 BIANCOUCINI, Count BIAGIO.

Sample of siliceous rock used in the manufacture of bottles.

2 PASQUALI, DOMENICO RINALDI.

Samples of asphalte, natural and manufactured.

3 SNEIDER, PELLEGRINI.

Four blocks of natural alum.

[Alum is found native at Tolfa, near Rome, in the form of a crystallined mineral, often of considerable hardness, of compact or earthy fracture, and occasionally in crystals of some magnitude. The alum of commerce is obtained by roasting this mineral and afterwards exposing it to efflorescence; it is then reduced to a paste, and afterwards dissolved and crystallised. The alum thus obtained is of the finest kind, the superiority over common kinds being said to be due to an excess of alumina, but it is probable that the temperature at which the evaporation is performed is of more importance than the raw material.—D. T. A.]

4 BIANCOUCINI, Count.

Sample of the product of tow of the Bolognese hemp.
Samples of several woods.

5 MORTI, Signor.

Sample of silk.
Pine-cones.

6 BERRETTA, DANIELE—Manufacturer.

Samples of various silks manufactured by the exhibitor.

7 THE FILANDA-BRACCI AL FANO.

Samples of silk.

8 RANUZZI, COUNT ANGELO.

Veils manufactured, partly in crape, and partly in stripes of various colours.

9 THE CHAMBER OF COMMERCE OF THE CITY OF CENTO.

Sample of Centese hemp, from the province of Ferrara, made into sail-cloth, and cords of various sizes.

10 MINGHETTI, MARCO.

Samples of hemp, and of articles manufactured from it.

11 BIANCHINI, LUIGI.—Inventor.

A new spring bit.

12 MILIANI, PIETRO.

Samples of paper made of flax and hemp.

13 MARCHESI, ALESSANDRO & GIUSEPPE OSSOLI.

Samples of bricks and tiles, in imitation of mosaic marble, manufactured of argillaceous earth from the vicinity of Rome.

[The material of which these bricks and tiles is made is of unusually fine and even texture, and of great purity. The earth appears to be a kind of pozzuolana, and is of volcanic origin. The mosaic work is not much inferior to that adopted for more valuable material.—D. T. A.]

14 LIVIZZANA, AVO ERCOLE.

A sample of a work in paper, cut by the exhibitor with scissors only.

15 Barberi, The Cavaliere—Artist.

A mosaic table, invented and executed by the exhibitor representing celebrated views in Italy.

[The exquisite perfection to which the art of Roman mosaic has reached is well exemplified in this fine specimen in which many of the cities of Italy are represented with a taste and elegance rarely equalled in similar works.

Roman mosaic is a combination of small oblong pieces of marble, glass, or other substance, of different colours, and cemented together into a compact mass, which is in fact a solid picture. The surface of such a picture can be ground down without injury, and is therefore much more durable than any ordinary picture. The art of mosaic is itself very ancient, but pictures have only been prepared since the commencement of the 17th century. In order to produce such works of imitative art, it is said that upwards of 50,000 different tints of glass are provided and kept in readiness.—D. T. A.]

16 Leyland, Captain Thomas, 7 *Old Jewry*—Proprietor.

Three groups in marble, executed by John Benzoni, an Italian sculptor, 73 Via del Borghetto, near the Piazza del Popolo, Rome.

1. Cupid and Psyche. The god is on the point of flying to heaven to carry to Venus, his mother, the "Box of Beauty," destined to calm her anger against Psyche. At his feet lies the arrow, the sharp point of which had recalled Psyche to life from the swoon she fell into, when she opened the vase given to her by Proserpine.

Four bassi-relievi, relating to the life of Psyche, are to adorn the sides of its base. They are now in progress of execution. The subjects are as follows:—Psyche on the point of killing Cupid, supposing him to be a monster. Psyche receiving the "Box of Beauty" from Proserpine in the infernal regions. Mercury transporting Psyche to Olympus. The marriage of Cupid and Psyche in the presence of all the gods.

2. "Gratitude," represented by the naked figure of a very young girl seated on a stone and extracting a thorn from the paw of a little dog.

3. "Innocence defended by fidelity." This is a pendant to and a continuation of the preceding subject.

Rinaldo e Armida. A group in marble, executed by Sig. Rinaldo Rinaldi, 27 Via delle Colonette, Rome. The subject is from the two following stanzas of Tasso's "Gerusalemma Liberata."

> Quì tacque: e, stabilito il suo pensiero,
> Strale sceglieva il più pungente e forte;
> Quando giunse e mirolla il cavaliero
> Tanto vicina alla sua estrema sorte,
> Già compostasi in atto atroce e fero,
> Già tinta in viso di pallor di morte.
> Da tergo le si avventa, e 'l braccio prende,
> Che già la fera punta al petto stende.
>
> Si volse Armida, e 'l rimirò improvviso;
> Chè nol sentì quando da prima ei venne.
> Alzò le strida; e dall' amato viso,
> Torse le luci disdegnosa, e svenne.
> Ella cadea, quasi fior mezzo inciso,
> Piegando il lento collo; ei la sostenne.
> Le fe' d'un braccio al bel fianco colonna;
> E'ntanto al sen le rallentò la gonna.
> *Tasso, Gerus. Liber.*, c. xx., st. 127, 128.

Marble figures: the nymph Glycera, and a nymph, both by the late R. J. Wyatt, of Rome.

"Pausias, the celebrated painter of Sicyon, in his youth became enamoured of a beautiful female of the name of Glycera, who had a singularly elegant taste in the arrangement of flowers for chaplets. Pausias, painting after nature and his mistress, became highly distinguished for his skill as a painter of flowers. The last effort of his pencil was a picture of Glycera herself seated, and in the act of arranging a chaplet. A production, in the creation of which, love, genius, and gratitude equally assisted, necessarily became a masterpiece; it was called the 'Garland twiner,' a copy of it sold for no less a sum than two talents."

This statue is represented in the accompanying Plate.

17 Boschetti, Benedetto—Artist.

Two mosaic tables, of 3 feet diameter each, in Byzantine style, representing the Triumph of Love and the Blessed Soul.

18 Macdonald, Lawrence—Sculptor.

An Iconic statue in marble, 6 feet high, and 3 feet in diameter.

19 Moda, Tommaso Della—Sculptor.

A large tazza of Oriental alabaster, worked by the exhibitor. This tazza, which is ornamented with two handles, is of the diameter of 3½ English feet; and from one handle to the other more than 4 feet.

[The unusual beauty of the material obtained by the artist for this work is at least as striking as the general aspect of the tazza itself, although this is as perfect as anything of the kind that is to be seen in the Exhibition. The material is a peculiar kind of limestone, and is by no means an alabaster, having received the latter name entirely from its softness and tone of colour, and the transparency of the stone. There would appear to be some difficulty in the details of working, owing to want of toughness in the material, but these have been perfectly overcome.—D. T. A.]

20 Moglia, Cavaliere Luigi.

Mosaics:—

1 Temples of Pæstum.

2 A circular table. This table is represented in the accompanying Plate.

3 A quadra, representing St. George.

21 Moglia, Domenico.

Mosaics:—

1 The Roman Forum.

2 The Colosseum.

3 Temples of Pæstum.

22 Rocchigiani, Antonio—Artist.

A mosaic, representing the Temples of Pæstum, at sunset.

23 The Royal Manufactory at St. Peter's.

Mosaics, representing—

1 A square, copied from the celebrated "S. Giovanni Battista," by "Guercino;" 4 feet high by 3 feet wide; by Raffaele Castellini.

2 A medallion, the portrait of Pope Bonifacio II., copied from the picture by Sig. Roberto Bompiani. These are intended to be placed in the New Basilica, St. Paul's. By Raffaele Castellini.

24 Savalini, Thomas.

Cameos in pietra dura (*Onyx*):—

1 Jupiter Fulminator, or Ceraunius, original by Thomas Saulini.

2 Portrait of the Rev. Dr. Townsend.

Cameos executed in shell:—

1 The birth of Venus; from a basso-relievo, by John Gibson.

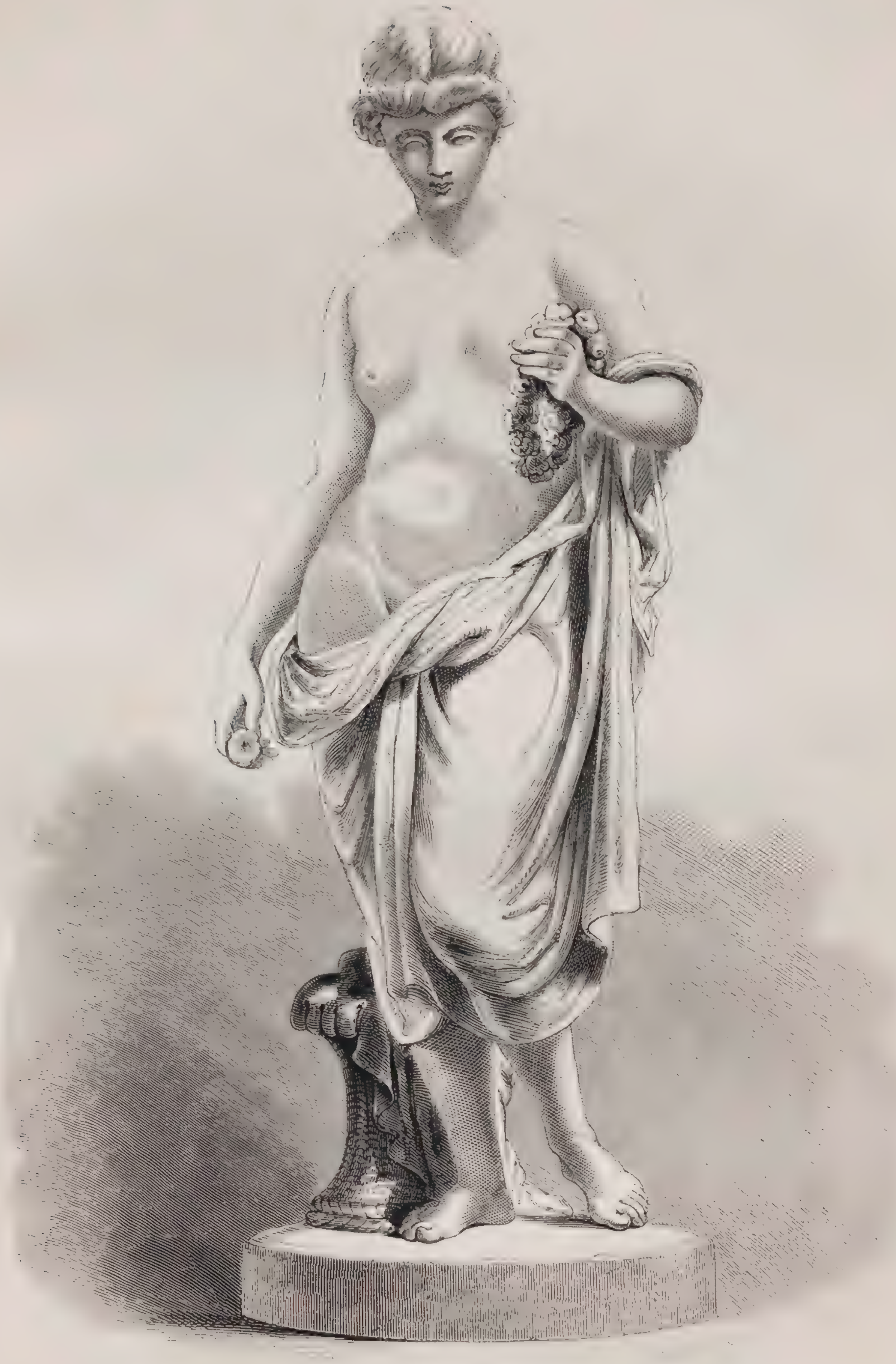
2 The Hours bringing the horses to the chariot of the Sun; from the basso-relievo executed in marble for Earl Fitzwilliam, by John Gibson, R.A.

3 Mount Roveto; from the fresco of Raphael in the Vatican.

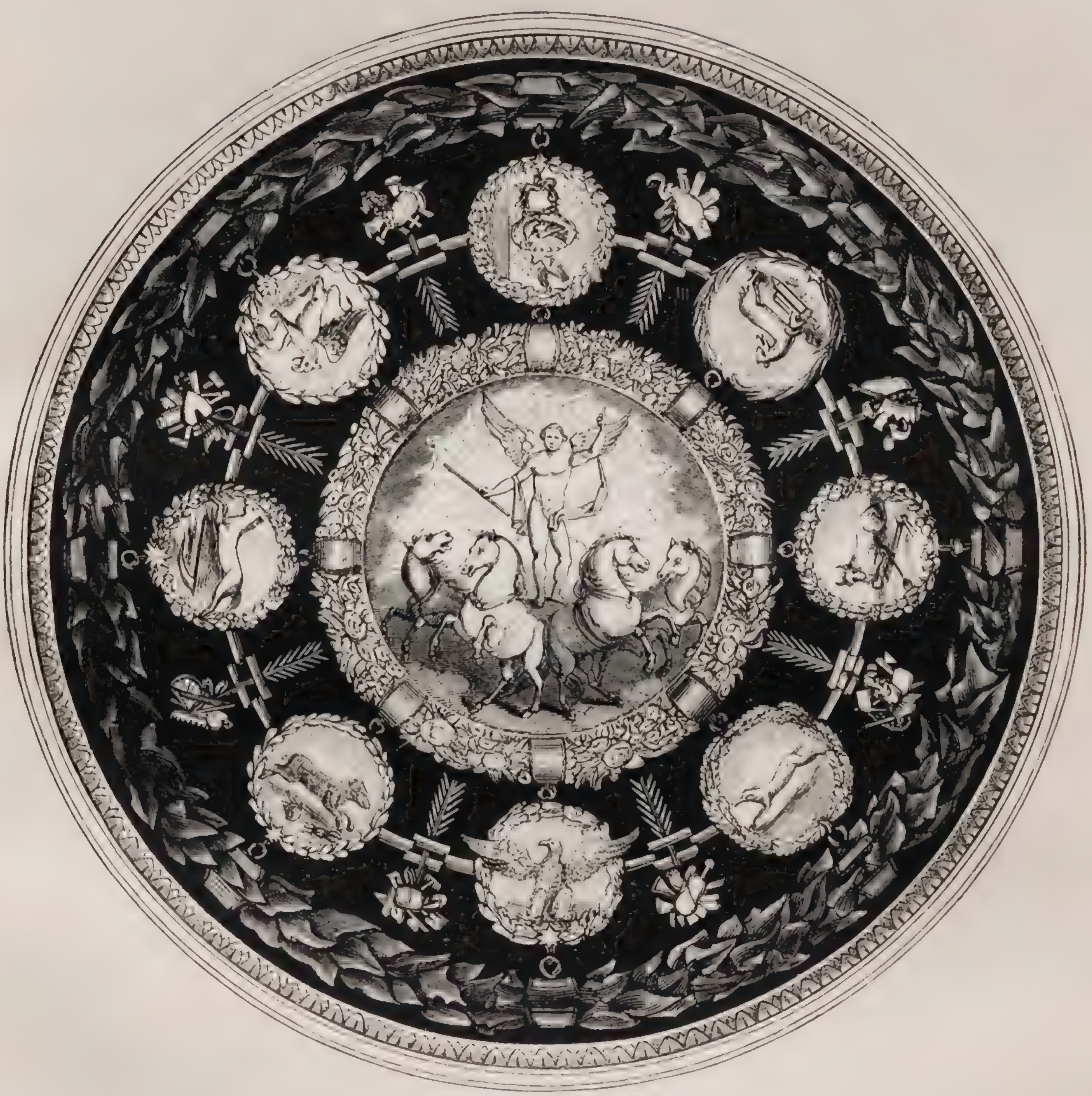
4 Spring; from a basso-relievo by Thorwaldsen.

5 Summer; from the same.

6 The marriage of Cupid and Psyche; from a basso-



259. STATUE OF GLYCERA. BY THE LATE R. J. WYATT. ROME.



181. A TABLE TOP, IN MOSAIC. ROME

relievo executed in marble for Her Majesty the Queen, by John Gibson, R.A.

7 Autumn; from a basso-relievo by Thorwaldsen.

8 Winter; from the same.

9 Bellerophon receiving Pegasus from Minerva; from a basso-relievo in marble, executed for C. S. Dickins, Esq., Costhurst, near Horsham, Sussex, by John Gibson, R.A.

10 Celestial and terrestrial love contending for the soul; from a basso-relievo executed for Lady Jane Davy, by John Gibson, R.A.

11 Young Bacchus, attended by Fauns; from an antique terra-cotta, in the Museo Campana, Rome.

12 Cupid and Hymen; from a basso-relievo by Thorwaldsen.

25 Small subjects in mosaic.

26 **Raineri, Biscia, Count.** (Agents, Fordati & Coxhead, 13 Old Jewry Chambers.)

Specimens of rough and refined sulphur.

27 **Pellegrini, Sneider,** *Rome.*

Two pieces of natural alum from the mountains of Civita Vecchia.

One sample of Pozzolana, or Roman cement, from the mine of San Paul, of Rome.

28 **Gott, M.**

"Ceres," a statue.

29 **Rinaldi, R.**

Round top of a table, mosaic work in hard pebbles.

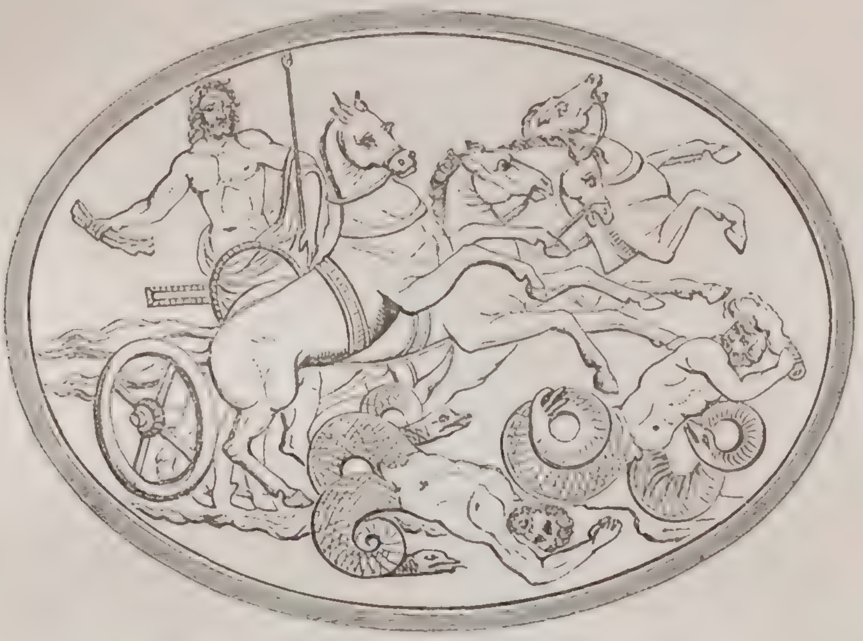
31 **Trentanove, A.**

A dove and a candelabrum, in plaster.

32a **Manley, General,** Proprietor.

The celebrated cameo of Jupiter overcoming the Titans, engraved on pietra dura (a fine onyx), and considered to be the chef-d'œuvre of the artist. By Salvator Passamonti, Rome. (Pupil of Canova, and first engraver to the Roman Mint.)

This cameo is represented in the annexed cut.



Passamonti's Cameo of Jupiter overcoming the Titans.

32b **Cassin, H.**

Group of the Laocoon, executed at Rome. The story of Laocoon is told by Virgil; the horrible fate of this unfortunate man and his children was brought upon them by the father's disobedience to the will of Minerva.

32c View in mosaic of the cascade of Tivoli.

33 View in mosaic of the Pantheon, by Cavaliere Luigi Moglia.

34, 35 Two scroll tables, in mosaic.

36 Several small subjects, in mosaic.

37 Three portions of the Roman Forum, executed in yellow marble, representing the Temple of Jupiter Stator, the Column Foca, the Temple of Jupiter the Thunderer, and various other specimens.

38 A table of about two feet and a half diameter, representing St. Peter's in the centre, the campanile, &c.

39 A mosaic, with two pigeons and flowers.

The above 34 to 39 inclusive are by E. Dies, of Rome.

40 Frame, representing two figures, after Carlo Dolci (mosaic).

41 Frame: subject, a Wild Boar Hunt.

42 Frame: view of the Great Piazza of St. Peter's, at Rome.

43 Frame: view of the Colosseum.

44 Frame: view of the Pantheon.

45 Frame: view of the Temple of the Sybil.

The above 40—45 inclusive by the Cavaliere Luigi Moja.

46 A vase and patera in silver, by Benvenuto Cellini, the property of Capt. Leyland. Very richly chased. The subjects of the vase appear to be partly of historical and partly of an allegorical character. The patera exhibits various scenes of pastoral occupation, boar hunting, &c.

47 Frame: the Bridge of Lugano.

48 **Jones, W.,** *Clytha, Rutland Gate.*

A Bagnarola, of Oriental lapis-lazuli, cut out of a magnificent block, 18 inches by 12, by Signor Sybilio, of Rome.

[Lapis-lazuli is chiefly obtained either from Persia or from the shores of Lake Baikal, in Siberia, where it is found in veins of calc spar, and is mingled with iron pyrites, whose bright yellow colour and metallic lustre heightens the effect of the deep rich blue of the rest of the mineral.

This blue is used by artists in the colour called ultramarine, made from the mineral.

Lapis-lazuli is a sulphur-silicate of alumina, and lime or soda. It is hard, crystalline but rarely in crystals, and it is extremely rare that a specimen is found of anything like the dimensions of the specimen before us.—D. T. A.]

49 Various shell cameos, carved by Guiseppe Deas, of Rome.

50 Dies, E.

Four large volumes, in white vellum:—Canina's Roman Edifices (*Edifizi di Roma*), 2 vols.; Canina's Christian Epochs (*Tempi Cristiani*); Maritime Antiquities of Etruria (*Antichita d'Etruria Maritime*).

51 Norchi, E., 13 *King William Street, Strand.*

English vase, copied from the antique, in green Prato marble, triangular stand, and solid lions' heads.

52 Trenta Nove.

Vase of white marble, in form of an Etruscan vase, executed in African stone.

53 A tazza in white marble, copied from the great Warwick Vase, and a Column in Oriental alabaster, representing the Trojan Column, both belonging to C. Trebbi.

54 An altar, and two vases in Oriental alabaster, by Della Moda, artist.

[The altar in this group is so contrived as to admit a light by which the beautiful transparency of the material may be seen at night. The vases are as remarkable for their elegance of form as for their delicacy of finish.—D. T. A.]

55 Godwell, M.—Sculptor.

Group of white marble, representing two boys with a bird's nest.

56 Bienaimè, Angelo, of Rome, 22 *Newman Street*—Sculptor.

Marble group, "Love Triumphant."

57 Costoli, Professor, *Rome.*

A favourite spaniel dog, modelled from life, in terra cotta, by Professor Costoli, for the Rev. Mr. Sawford, the owner.

TUSCANY

North Areas, F, 44 to 48; G. H. 46.

Commissioner in London, Professor Philip Corridi, 7 *Piccadilly.*

Although Tuscany has long since ceased to enjoy the industrial superiority which she held during the Middle Ages, when she reckoned among her tributaries some of what are now the most powerful nations in Europe,—she still looks forward to brighter prospects; and believes that the same sort of pre-eminence which she once derived from her skill in the manufacture of woollen and silk fabrics, may again, in some degree, be realized from the valuable productions of her mines and her soils. It is unquestionable, indeed, that Tuscany, owing to her numerous mines, which are daily being discovered, is the Saxony of Italy; while, for her flourishing agriculture, she may be properly compared to Belgium. The grounds for this assertion are to be found upon the tables of this collection, on which are laid out the numerous specimens of minerals, extracted from mines that are now in full work, and from others which, though not worked, are yet well known to contain rich ores. The samples of hard stones, marbles, metallic ores—all so remarkable from their abundance and the great quantity of woods of all descriptions, suited for cabinet-making, and adapted for naval constructions, supplies satisfactory evidence of her natural wealth. The collection of agricultural produce is not so complete as might have been expected; but, boracic acid, of which we are here shown superior specimens, is a produce very much sought for, and of Tuscan origin. Discovered in 1777, it was substituted for the borax of India and Thibet, which had for a long time supplied the trade. It is now extracted, on an extensive scale, under the intelligent superintendence of Count de Larderell, in the volcanic localities of Monterotondo and Montecerboli, in the province of Volterra; and nearly all the manufactories in Europe use it. The qualities of the iron from the rich mine of Elba, many samples of which have been sent to the general Exhibition, are well known. Interesting specimens of iron from that island will be found in the Tuscan division, as well as some of the splendid marbles, granite, cipollino, copper, &c., from the same place. The Tuscan timber is well known to many of the English ship-builders, who are in the habit of using Tuscan in preference to British oak in some departments of ship-building.

Of the specimens of madder-root from the Maremme, the fine samples exhibited are quite equal to the best used in England, and which is imported in large quantities from the Continent. The evidence supplied by the Tuscan manufactories, as to its quality, is satisfactory, especially if we look at the red cotton from the dye-works of an exhibitor of Pisa, who carries on the various processes on a very extensive scale.

Specimens of cotton are exhibited from Ravacchio, near Pisa, where there exists a large manufactory of cotton tissue, which has been the means of improving the whole locality, and of benefiting Tuscany, by substituting for the foreign tissues its own cotton cloth and cashmeres, which are to be seen in the Exhibition, and will bear comparison with the best tissues of the same quality.

The samples of soaps from Leghorn have been brought to much perfection, and represent a very large manufacturing establishment, exporting annually a considerable proportion of its products.

Among the chemical productions forwarded by Tuscany is *santonina*, a powerful vermifuge.

We cannot pass over in silence another eminently Tuscan manufacture—that of straw bonnets. The specimens sent from Prato and Florence are extremely perfect. The Tuscan kinds of straw-plait are considered very superior.

Tuscany has not forwarded many statues to the Exhibition; but those which may be seen—such as "Bacchus reclining," "Psyche," "Hagar and Ishmael," &c.—are sufficient to confirm her celebrity. Those fine statues have been selected by a special Commission. The selection was not made without consulting several men of such qualifications as to warrant the soundness of their opinion. But the artistical taste of the Tuscans is likewise perceptible in their wood-carvings, in their hard-stone mosaic, and in their scagliola and marquetrie works.

1 Imperial and Royal Technological Institute, *Florence.*

Specimens of sand-stone, from Ceceri, near Florence, Signi, and several other localities in Tuscany.

[Building materials are plentiful in Tuscany, and the "Pietra Macigno" is one of the commonest. It constitutes the principal mass of the Appenines and of the secondary chains which are thrown off from them. The largest supplies of this material are derived from the quarries of Signi, Monte Ciceri, near Florence, &c. The Pian de Novoli, near Fiesole, supplies a kind of Macigno, fit for architectural purposes, on account of the fineness of its grain.

The "Tufi di Livorno" are in great demand for building purposes.

The tufa is a light tenacious stone, extracted from the quarry, and worked with the greatest facility. Some new quarries have been recently discovered among the mountains of Pisa and Lucca.

The "Verrucano Psammettico." This is an extremely fine and hard-grained stone, streaked with pink bands, and compacted by means of a quartzose talc-like cement. It withstands the influences of every kind of weather, and may be advantageously employed in the internal construction of large edifices.]

Specimens of refractory stones from quarries in Tuscany.

The steaschist, or "Pietra da Forni," withstands the action of fire better than any other stone.

The "Pietra Morta," of Golfolina, Pistoia, &c., is the same as the Pietra macigno; but it contains a smaller quantity of lime, and is more porous—it cannot resist the heat of a smelting-furnace.

The "Pietra di Caminino" is used for the construction of kilns moderately heated.

There are also several refractory earths well known in Tuscany, such as those from Lugnano nel Monte Pisano, the fossil flour of Castel del Piano, &c., which are used for retorts and mattrasses.

2 Royal Manufactory of Salt, in Volterra.

Rock-Salt from the salt works of St. Leopold.

Salt obtained from the evaporation of saliferous waters.

Alum—Specimens of alum dug in Tuscany, and of purified alum.

[Alum, a salt of so great importance in the arts, is found native in Tuscany, and the alum-pits of that country were an inexhaustible source of wealth for the Grand-Duchy, before the greatest part of that which is met with in commerce was artificially prepared.]

Iron—Specimens of iron ore from the Royal Iron-works in the island of Elba.

[The celebrated iron-mines of Elba lie in the southern point of Nera, in Cape Calamita, and extend northwards. The abundance of the ores, the purity of the metal, and the situation of the mines (in the vicinity of the sea), render them a rich and inexhaustible source of wealth for the country.]

Specimens of the copper ores worked in Tuscany, from mines unwrought, but of well-known productiveness.

The samples of copper, No. 1 blue, and No. 2 yellow, are extracted from the mine called the Faggeta, at Miemo, about four miles in a direct line from the celebrated copper-mine at Caporciano, Montecatini, in the valley of Cecina in Tuscany.

The blue mineral is found in the adit level, on the north lode, about twelve fathoms from the surface. The north of the lode is kellas ground, the copper is found in a good blue fluxcan; the south of the lode, serpentine.

The yellow mineral is found in a south lode in the 10, and also in the 20 fathoms level below the adit. The fluxcan is white, the ground serpentine.

The mine authorized by H. R. H. the Grand Duke of Tuscany in 1845, has been worked nearly five years driving galleries (levels); but now having got up a good whin, they are sinking a shaft down on the 20 fathom level on the south lode, where it is expected to find the lode in the 30 fathoms level.

In the latter end of the year 1849, about 12 tons of the yellow copper the produce of this mine, sent to Liverpool, per Nathalie, as a sample, rendered 22⅛, and sold at 17*l*. 13*s*. per ton. In the mean time 5 tons were also sent to Marseilles to be smelted, which rendered 21⅛, and were forwarded in pigs to Leghorn. The quality was considered very superior.

The blue mineral has not yet been analysed anywhere.

In the opinion of a practical Cornish miner, who now conducts the works, the mine presents the greatest probability of success: the nature of the ground and the direction of the lodes being precisely like those of Montecatini, which is one of the richest mines in Europe.

Lead Ores and Lead—Specimens of *argentiferous* lead ores worked in Tuscany.

Quicksilver—Specimens of quicksilver, worked in Tuscany, and from mines unwrought, but of a well-known productiveness.

3 Colouring earths.—Specimens of colouring earths and Tripoli earth, from the island of Elba, and other localities in Tuscany.

[There are three classes, or qualities, of Tuscan colouring earths: those obtained from ferruginous and clayey sediments, such as the *yellow earth* and the *Terra d'ombra*, of Castel del Piano. Some others have been formed by subterranean waters, which infiltrating in the strata, have abandoned those particles of oxide of iron and manganese, as well as the clay they had carried away in their course. Such was the mode of production of the *Terra d'ombra*, which is met with near Pitigliano. We have lastly the various kinds of ochre and the oxides of iron, so abundant in the vicinity of the lodes, and presenting gradations of yellow, red, &c.]

4 Sulphur—Specimens of sulphur from the sulphur-mines of Pereta (province of Grosseto); native and purified sulphur.

5 *Alum*—Specimens of alum from the Royal Alum Pits of Montioni (province of Massa Maritima); crystallized alum from the same alum-pits.

6 Mine of Quicksilver, *Levigliani, Province of Pietra-Santa.*

Specimens of the ore and the metallic quicksilver.

[In the mountain situate opposite the country of Levigliani, veins of quartz are found, the cavities of which contain metallic quicksilver and crystals of cinnabar. That mine was wrought under the reign of Cosmo III., and belongs now to Prince Poniatowski.]

7 Mine of Cinnabar, *Ripa, Province of Pietra-Santa.*

Specimens of the ore, cinnabar, and quicksilver.

[The mine of Ripa, at the entrance of the valley of Seravezza, was discovered in the year 1839. Cinnabar lies in veins, in talcose schist, and is not unfrequently mixed up with oxide of iron. The works have been carried on for these last ten years by three Companies.

8 **Mine of Quicksilver**, *Jano, Province of Volterra.*

Specimens of the ore and metallic quicksilver.

[This mine, the property of the Mining Society of Florence, consists of cinnabar included in strata of clayey schist. Cinnabar is one of the ores of quicksilver.]

9 **Mine of Quicksilver**, *Castellazzaro.*

Specimens of the ore and metallic quicksilver.

[This mine had not been in full operation before 1849. It gives employment to 70 men under ground, and produces annually 15,000 lbs. of metallic mercury.]

10 **Mine of Quicksilver**, *Pian Castagnaio.*

Specimens of the ore, cinnabar, and quicksilver.

[There are few geological documents concerning that mine which is situate on the grounds of Sig. Barbini, and is wrought under the superintendence of Sig. E. Espinassy. The first excavations took place in 1846, and the ores yielded yearly about 9,000 lbs. of metal.]

11 **Mine of Quicksilver**, *Capita, near Cabalbio, province of Volterra.*

Specimens of the ore and native cinnabar.

[This mine was discovered not long ago, and the works have not been carried on with regularity. It is the property of Sig. Collacchioni.]

12 **Hall Brothers, Sloane, & Coppi**, *Florence.*

Specimens of the copper ore from the exhibitors' mine at Montecatini, in Val di Cecina. Specimens of the produce of their melting-house at Briglia, near Prato.

[The copper mine of Montecatini is the richest in Tuscany. It was wrought in 1400, and then almost abandoned till the year 1827, when the works were resumed with more spirit. It is extremely productive, yielding a considerable annual produce of pure metal. The proprietors of this mine are also in possession of a large smelting-house at Briglia, near Prato.]

13 **Vegni, Prof. Angelo**, *Siena.*

Specimens of argentiferous lead ore from the mine of Seravezza, known under the name of Battino. Specimens of the melting.

[The lead mine of Bottino is situate in the Alps, near Seravezza. It is the first mine yielding argentiferous lead that proved a lucrative speculation in Tuscany. It produces sulphuret of argentiferous lead and sulphuret of antimonious argentiferous lead.

The quantity of ore obtained is yearly increasing, and amounted for two years (1848-49) to 2,700,000 lbs. In 1850, the entire produce was upwards of 3,000,000 lbs.

The lead ore is conveyed to the smelting-house by means of a peculiar railway requiring neither steam nor engine.

The smelting is effected at a very low rate of expense, owing to the ingenious disposition of the apparatus and furnaces.

The ores produce—silver at 98 and 98½; red litharge for the composition of oil varnish; yellow litharge; antimonious lead, used in Tuscany by type-founders; common lead for the construction of water-pipes and cisterns, &c.]

14 **The Metallo-technical Society**, *Florence.*

Specimens of argentiferous lead from the mines of Castellaccia and Poggio al Montone, in the Tuscan Maremme, excavated by the Metallo-technical Society.

[Those mines did not escape the observation and industry of the ancients, who, however, did not penetrate to any great depth; the Metallo-technical Society have, therefore, the certainty of possessing a solid mass of minerals.

There are already 24 beds which yield not less than 100,000 lbs. Tuscan every week. In the mean time other excavations are now preparing, while various preliminary works are in progress. Upwards of 200 men are already employed.

As soon as the Metallo-technical Society have experienced the benefit of the present undertaking, with regard to the first group already worked by the ancients, they intend to excavate the second and third groups of Poggio al Montone, as well as one of the fine veins of the unworked mines of Castellaccia, the surface of which is indicative of some very beautiful lodes.

The Metallo-technical Society, encouraged by their first attempt, have undertaken to erect a small smelting-house, in order to obtain more certain and practical results. The same Society have also other mineral works in hand in the vicinity of Poggio al Montone, on the northern side, where they are in possession of a metallic site of the highest importance to an extensive industrial speculation.]

15 **Mejean, G.**, *Florence.*

Specimens of antimony ore from the mines of Montulo and Pereta. Specimens of the melting.

[The principal repositories of antimony are found at Montanto and Pereta, in the Maremme. In the former place the metal is extracted with facility, on account of the lodes lying in the superficial stratum: but the works are carried on underground, at Pereta. The mines yield about 590,000 lbs. per annum.]

16 **Frecliani, C.**, *Lucca.*

Quartzy steaschist, or refractory stone, for building melting-furnaces; from a quarry in the vicinity of Camaiore (province of Lucca).

Incrustations of the mineral waters of St. Philip baths. Ornamental stones, and stones used in the arts.

Ornamental Stones.—Specimens of marbles existing in various localities of Tuscany; marbles of Seravezza, Santa Maria del Giudice, near Lucca, Monte Rombolo (province of Siena), and the Elba island.

The working of the quarries of Seravezza was completely interrupted towards the end of 1600, solely on account of the decline of the fine arts; although it had yielded a great amount of materials in the times of Michael Angelo and Cosmo I. But the works having been resumed with considerable energy in 1821, through the exertions of the present Grand Duke Leopold II., and under the excellent management of M. Borrini, they soon reached the highly prosperous condition which they now enjoy. The pure and fine "saccharides," from the mountains of Seravezza, is prized by sculptors, and is in great demand in England, France, Russia, and several other countries. The unquestionable superiority of the produce of these quarries induced the Emperor of Russia to send a considerable order, now in progress of execution, amounting to upwards of one million of roubles, for the internal decoration of the new Cathedral of St. Isaac, in St. Petersburg.

Before the year 1821, the period to which we have alluded, the marble trade of Seravezza consisted in the manufacture of a few flooring-flags of common white and blue marbles, from the Cappella mountain, and of some tables. The improved results during the last twenty-five years are almost incredible. There is not a single marble quarry round Seravezza which is not excavated and furrowed everywhere. Children begin to work there when nine years old, and easily earn their livelihood, and adults gain four times as much as they require to keep themselves comfortably. A small market town has sprung up near the sea-shore, where the shipping of marbles take place, and now contains about 500 people, whereas, before 1821, the solitary hut of a fisherman was the only edifice discernible on the spot. The natives have, by degrees, built and manned a small fleet, to carry on a coasting trade between Genoa, Leghorn, and Marseilles. In addition to the white marbles for artistical purposes, which is principally quarried in the mountain of the Altissimo, other magnificent marbles,—coloured and veined,—from mountains in the neighbourhood of Stazzima, are highly valued by the English and the French.

Tuscany possesses several other remarkable quarries; and, although their works are not in full or regular activity, their richness should induce capitalists to give them their serious attention. Santa Maria del Giudice, in the Pisan mountains, is one of these. The excavation was lately begun: the marble is yellowish, sprinkled with large spots, constituting a pudding-stone of exquisite beauty. Several specimens have been sent to the Great Exhibition, and, amongst other articles, the base of a column, the material of which might be used with great advantage for the decoration of buildings.

As to the marbles from the quarries of Campiglia, under the management of Messrs. Perdicarri and Girardot, of Leghorn, it is to be remarked that the mountain where the works are carried on, and which is known under the name of Monte Rombolo, forms part of a series of mountains consisting of a mass of marble, which, according to the opinion of geologists, is perfectly analogous, as regards its age and origin, with the seat of the celebrated quarries of Carrara and Seravezza. The Monte Rombolo marbles possess various and distinct qualities: some are fit for architectural works, and some are excellent for sculptural purposes. Among the latter, artists give the preference to the "Pario," which, on account of its white and bright grain, is considered as being equal to the Paros marble of ancient Greece. The common marble, which can be used for sculptural as well as architectural works, is found in large quantities in Monte Rombolo, and yields blocks of the largest dimensions.

There are three other places, in the vicinity of that mountain, where the works are in full operation, namely, the Mortaio, Guira, and Medici quarries. The declivity of the mountain and the proximity of the Campigliese-road and of the sea afford every facility for transport at a very low price. There is also, near Monte Rombolo, another quarry of blue marble (Bardiglio), which proves a very successful undertaking.

Other quarries, well worthy of notice, are those of Pescaglia, in the Luccan territory. They are situate in the range of the mountains of Hazzema, near Seravezza, and lie behind them. They are four in number, at a distance of about half a mile from each other. They have been visited by artists who speak highly of their richness. They yield a marble, the grain of which has been found excellent, although the superficial structure only has yet been examined. Three bases of columns and several tables have been sent to the Exhibition as specimens of the various marbles of Pescaglia; but, in order to form a correct judgment of these quarries, and of the facilities they afford to work them upon a large scale, it is necessary to see the blocks of red and black marble that have been lately extracted. These are far superior to the specimens sent, as to their colour, the fineness of their grain, the diminution of specks, and the total absence of small capillary veins.

The Tuscan division presents, also, specimens of a very valuable marble, which has been but slightly noticed heretofore, and which is known under the name of "Lumachilla." A specimen of this can be seen in the shape of a large round table, cut out of a piece of marble from the superficial stratum; it is probable, therefore, that finer blocks might be extracted should the undertaking be conducted on a larger scale.

Specimens of the fine marbles of Siena, on the tables of the Tuscan department, confirm their celebrity. They present a great variety. Those known under the name of "Giallo di Siena" and "Eastern Alabaster" are amongst the finest in the Exhibition. Castel Nuovo Dell' Abate, near Montalcino, in the province of Siena, is in possession of the finest qualities of those marbles as regards their colour, transparency, and hardness; properties which make them susceptible of receiving the most perfect polish.

The marbles from other localities are such as those found at Bolgheri and Castagneto, on the estates of Count Dèlla Gherardesca. Some specimens have been sent of the red, spotted, and veined sorts, as well as a large quadrilateral table, and a small square one.

In addition to its fine marbles, the island of Elba supplies granite, cëpollino, &c. Granite constitutes a portion of the soil of that island, and very remarkable blocks have been procured thence at different periods. A quantity of large columns, and chiefly those in the Cathedral and Baptistry of Florence, were cut out of blocks from the mountains of Elba—principally those of Santo Pietro in Campo. The Grand Duke Cosmo I. caused a piece of granite from that island to be shaped into a large bowl, about 20 metres (nearly 66 feet) in circumference, which was placed in the garden of the Pitti Palace, in Florence, where it may still be seen. The gallery in the cathedral of Ravenna consists of a single block of that granite, and it was the largest in existence until the erection of the granite pedestal to support the statue of Peter the Great in St. Petersburg.

Specimens of lithographic stones, from various localities in Tuscany, and especially from the quarry of Ponte in Neve, belonging to M. P. Giovannini, of Florence.

Collection of every quality of alabastrites, from quarries known in Tuscany.

Hard Stones.—Specimens of chalcedony, and a variety of hard stones existing in Tuscany.

[Tuscany is in possession of very large quantities of *Pietre dure*—hard stones, of tints of various and lively colours, which supply materials for that fine Tuscan manufactory of *Pietre dure* works.

The chalcedony and Arno-pebble constitute the most important materials of that manufactory. These, with agates and *corniole*, are admirably adapted to the representation of branches, flowers, vases, animals, &c., on account of the variety of their tints and their transparency.]

17 Ammannati, Capt. T., *Florence.*

Two fragments of tormaline from the Elba island.

18 A lady's collar, made of various hard stones from the island of Elba, and mounted in gold.

19 Caillon, Maillan, & Formigli, *Leghorn.*

Specimens of coals from the exhibitors' coal-pit in Montebamboli, in the Tuscan Maremme.

[Coal beds, or strata, are found in various localities of Tuscany, but the better known are those of Val di Bruna, and Val di Pecora, which were first worked in 1839, under the superintendence of the exhibitors. The Bruna and Pecora coals are not inferior to the best qualities in point of heat, and for smelting purposes. They kindle easily; in burning they run together into a solid mass, and leave a small quantity of residuum or ashes.

20 Santi, Dr. Clemente, *Montalcino.*

Fossil flour from Castel del Piano. Floating bricks made with the same flour.

21 Querci, T., *Florence*—Manufacturer.

Specimens of varnish from the exhibitor's manufactory:—1. A bottle of copal varnish, and a box of the rosin of which it is made. 2. A bottle of mastic varnish, and a box of the rosin with which it is prepared. 3. A bottle of amar-varnish, and a box of the rosin of which it is made. 4. A bottle of varnish for yellow metals, and a box of the rosin of which it is made. 5. A bottle of varnish for white metals, and a box of the rosin with which it is prepared. 6. A bottle of poppy-oil, and a box of the seeds which supply it.

22 Corridi, G., *Leghorn*—Manufacturer.

Specimens of sulphate of quinina and santonina from his manufactory.

[The barbotina, or semen contra, an *Artemisia*, has been used in Europe for some centuries, as a very active vermifuge; but it was only in the year 1830, that the principle containing the vermifuge property was discovered, it is *santonine*, a substance preferable to the powder or decoction of the *semen contra*, on account of the offensive smell of the latter, while the santonine is perfectly inodorous. This is the more important, as vermifuges are generally prescribed to children.]

23 Conti, H., & Son, *Leghorn*—Manufacturers.

Specimens of soaps from the exhibitors' manufactory:—1. White liquid soap prepared with olive oil. 2. Marbled soap entirely prepared with olive oil. 4. Rosin soap. 5. Marine soap made of vegetable and animal grease.

24 De Larderell, Count Francisco, *Leghorn.*

Alabasters, and produce of the *suffioni* of boracic acid, from the exhibitor's estates in Montecerboli Castelnuovo, and Monterotondo.

[Boracic acid is found in an uncombined state in many of the hot springs of Tuscany. It occurs sometimes in combination with soda, and is imported in a crystalline form. These crystals are coated with a rancid, fatty substance, and require to be purified by repeated solutions and crystallisations. When pure, these crystals are white, and have an unctuous greasy feel; they are soluble in alcohol, communicating a green tinge to its flame; when fused they form a transparent glass, and have been found to unite with the oxide of lead, producing a very uniform glass, free from all defects, and well adapted for the purpose of telescopes and other astronomical instruments. Borax is much employed in the arts, particularly in metallurgic operations; also in enamelling, and in pharmacy.

Tuscany is indebted to the exhibitor for the extensive extraction of boracic acid. From 1839, the manufacture has yearly improved, more efficacious methods having been resorted to, and an economical process found for the purifying operation. The exhibitor's main object was to procure a ready sale for that produce, by promoting its use in the manufacture of glass:—his efforts have been already successful.]

52 Ridolfi, Professor Michele, *Lucca.*

Colours for encaustic painting, prepared by a peculiar process of the exhibitor's invention; and paintings executed by him to show the effects of the colours.

[The exhibitor has resolved a very highly interesting chemical problem, namely, the solution of copal gum without any fire, or the addition of any kind of oil. His varnish will be found valuable, on account of its hardness and transparency, principally when applied to the ceramic arts. He also succeeded in dissolving elastic rosin, without making use of fire or oils. His third discovery consists in the perfect amalgamation of wax, rosin, and glue with water, for encaustic painting. The exhibitor has also sent some specimens of gum-lac extracted from certain substances, which were thrown away as perfectly useless; it is known in the trade under the name of *lacca ridolfi.* Another kind of lac is the *lacca rosea* (pink lac), which could not be procured hitherto, and will be advantageously used in carnations, as it contains no substance that would alter the tints.

26 Mussini, Professor C., *Florence.*

Colours for painting after a new composition, and specimens of painting on a consistent body of terra-cotta, to show the effects.

[The exhibitor has discovered a peculiar lasting composition, which, being mixed with the colours used for encaustic painting and paintings in fresco, prevents the action of the sun and the effects of the moisture.

The exhibitor does not make use of wax, oil, or varnish, among the ingredients of his preparation, which can be applied upon walls, canvas, wood, and copper, or any other substance. The dirt can be washed off from the painting with a wet sponge.

Their Majesties the Emperor of Russia and the King of Prussia are in possession of several historical pictures executed by this method.]

27 Brocchi, Caval V., *Florence.*

Soft white wheat from the hills of Arcetri, near Florence.

28 Sloane, F., Esq., *Florence.*

Soft white wheat from the exhibitor's estate at Careggi, near Florence.

[This is the common white wheat, cultivated in Tuscany, from the harvest of 1850. The weight of a *staio* of wheat is 58 lbs. Tuscan; a *staio* is equivalent to two-thirds of an English bushel, and the Tuscan pound consisting of 120 g., while the English contains 160 g., it follows that the weight of a bushel of this wheat is 63 lbs. 3 ozs., British, that is to say, just as much as the best English wheat.

In 1850 the harvest proved rather indifferent. Corn was plentiful, but of an inferior quality; so that the specimen forwarded to the general Exhibition does not exactly identify the genuine wheat cultivated in the plain of the Arno.]

29 Paoletti, F., *Pontedera.*

Stiff wheat for Italian pastes, from the plain of Pisa. Specimens of superfine Italian pastes.

30 Ridolfi, Marquis C., *Florence.*

Fir-cones and fir-nuts, called *pinoli stiacciamano*, from the exhibitor's estates.

31 Orsetti, C. T., *Lucca*.

Specimens of olive oil, from the exhibitor's estate on the hills of Lucca.

32 Ruschi Brothers, *Pisa*.

Olive oil from the exhibitors' estate at Calci, near Pisa.

33 Pacini, Dominica, *Pisa*.

Olive oil from the exhibitor's estates at Buti, near Pisa.

34 Saracini, Caval A., *Siena*.

Specimens of two different qualities of olive oil, from the exhibitor's estate in Castelnuovo-Berardenga, near Siena.

35 Pastorelli, D., *Archidosso*.

Specimen of corn, called marzuoto, supplying straw for bonnets.

35a The Imperial and Royal Technological Institute, *Florence*.

Madder-roots from the Tuscan Maremme. The same roots pounded and reduced to powder.

Specimens of Indian corn, straw for brooms, from Campi, near Florence. Specimens of brooms, such as are used in Tuscany, made of that straw. Collection of specimens of Tuscan woods, used for domestic and naval purposes. Specimen of fir boards from the Royal forests of Cascutino.

36 Lambruschini, R., *Florence*.

Specimens of cocoons of silk-worms reared by the exhibitor from 1842 to 1850.

37 Scoti Brothers, *Florence*.

Raw silk from the exhibitors' spinning-mills.

[The exhibitors' silks are well known and appreciated in London and Lyons, where they find every year a ready sale.]

38 Della Ripa, L., *Florence*.

Raw silk from the exhibitor's spinning-mills.

39 Poidebard, N., *Portici, near Florence*.

Raw silk from the exhibitor's spinning mills.

[The white and yellow silks of the exhibitor have been highly praised, and particularly the former on account of its brightness and perfect whiteness.]

40 Petrucci, Caval C., *Siena*.

Raw silk from the exhibitor's spinning-mills.

41 Pieri, Count T., *Siena*.

Raw silk from the exhibitor's spinning-mills.

[Raw silk is produced by the operation of winding off at the same time, several of the balls or cocoons (which are immersed in hot water, to soften, the natural gum on the filament) on a common reel, thereby forming one smooth even thread. When the skein is dry, it is taken from the reel and made up into hanks. These operations are performed with considerable precision and speed by the exhibitor's spinning-mills.]

42 Pannilini, Caval. A. G., *Siena*.

Raw silk from the exhibitor's spinning-mills.

[The excellent quality of this silk has already found for it a ready market amongst the best Tuscan silks, although the exhibitor had introduced it but lately to the trade.]

42a Ristori, M., *Leghorn*.

Potash from the exhibitor's manufactory in the Maremme of Grosseto.

43 Franceschini, T., *Prato*.

Raw silk from the exhibitor's spinning-mills.

[The spinning system of the exhibitor and the superior quality of his produce are equally worthy of a particular notice.]

44 Rimediotti, Madame A., *Pistoia*.

Raw silk from the exhibitor's spinning-mills.

45 Mordini, C. T., *Barga*.

Raw silk from the exhibitor's spinning-mills.

46 Davetti, Luige, *Loro*.

Raw silk from the exhibitor's spinning-mills.

47 Lepori, Tomasini, *Nudiglioma*.

Raw silk from the exhibitor's spinning-mills.

48 Ravagli, Paolo, *Marrudi*.

Raw silk from the exhibitor's spinning-mills.

[The exhibitor has received already several prizes in Tuscany, on account of the great perfection of his silks, the pureness of their colour, their smoothness, elasticity, and clearness.]

49 Zavagli, Pietro, *Palazzuolo*.

Raw silk from the exhibitor's spinning-mills.

50 Casuccini, Cavaliere Francesco, *Cheanciana*.

Raw silk from the exhibitor's spinning-mills.

61 Savi, Professor Pietro, *Pisa*.

Raw silk from silk-worms reared upon the leaves of the Philippine mulberry.

52 Collacchioni, Giuseppe, *Borgo San Sepolcro*.

Three merino fleeces, from flocks belonging to the exhibitor.

53 The Manager of the Alberese Estate, belonging to H. I. and R. H. the Grand Duke of Tuscany:—

Three fleeces of cross-bred merino sheep, from the sheep-folds of the Alberese.

54 The Manager of the Badiola Estate belonging to H. I. and R. H. the Grand Duke of Tuscany:—

Three merino fleeces from the sheep-folds of the Badiola.

55 Turchini, Lorenzo, *Florence*—Inventor.

Machine for carrying heavy burthens, which the exhibitor has named a Panattoforo.

56 Pietro, Eugenio, *Lucca*—Inventor.

Model of a locomotive with an articulated system, invented by the exhibitor.

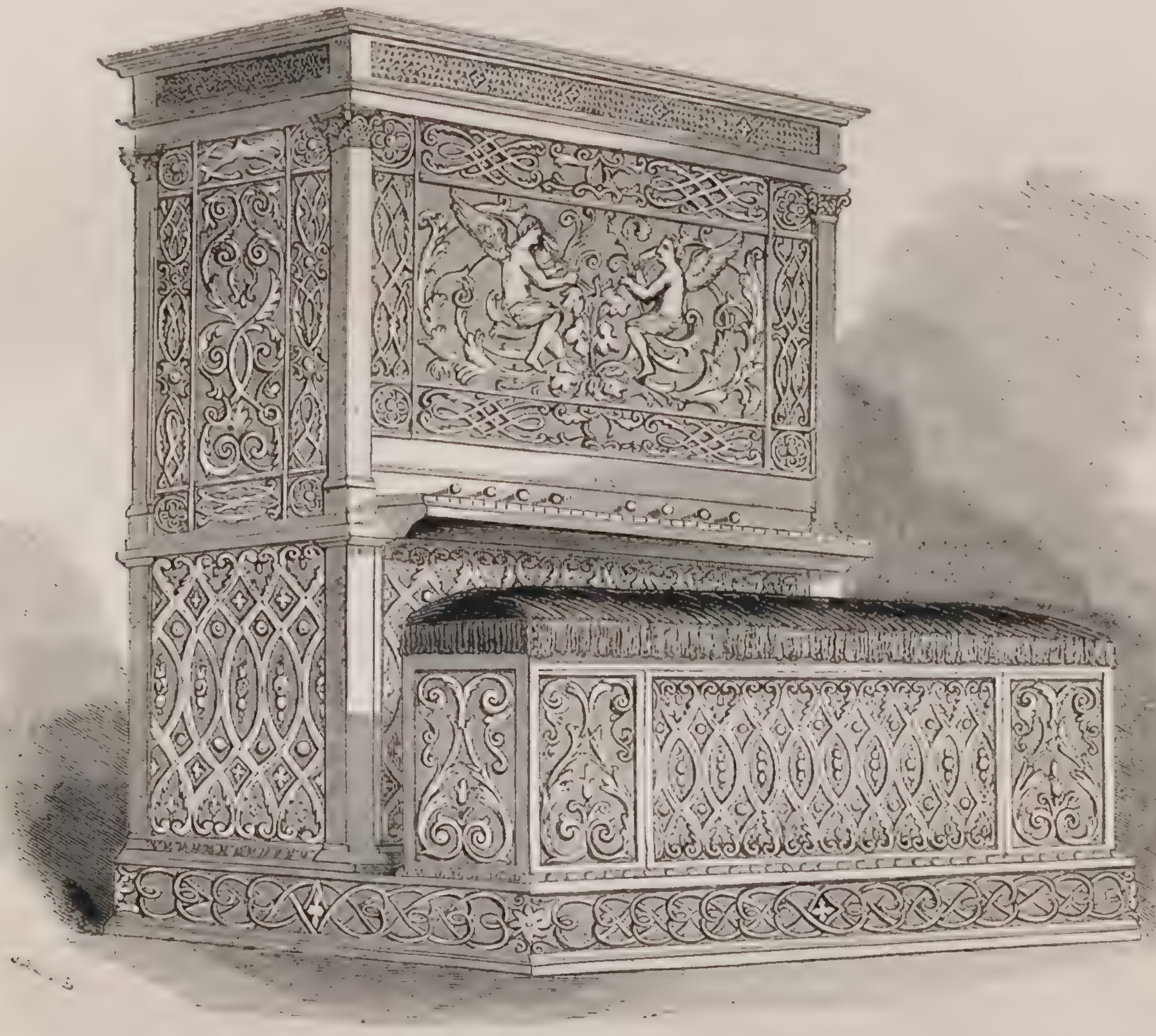
57 Gonnella, Professor Tito, *Florence*—Inventor.

Machine for measuring plane surfaces, executed under the exhibitor's direction, by order of H. I. and R. H. the Grand Duke of Tuscany, to whom it belongs. Invented by the exhibitor.

58 **Ducci, A. & M., Brothers**, *Florence*—Inventors.

Organ with the counter bass, *amisone*, 16 feet high, of a new construction, presented by the exhibitors as their invention; the case carved by Mr. A. Barbetti, of Siena, and gilt by Mr. Vincenzio Stolgi, of Florence. Baristate, an instrument adapted to the bass of an orchestra, and lately invented by the exhibitors.

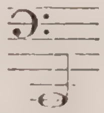
This organ is exhibited in the annexed cut.



Messrs. Ducci's Organ, with Contrabasso Amisone.

[This organ, of diminutive size, possesses the same tone as one eight times larger. Its chief peculiarity is the position of the lower notes, which are placed in the stool on which the player is seated. These lower notes are placed in one single pipe, which gives the lowest C, with 16 feet, and the successive tones of the chromatic scale by means of eleven holes. To obtain the tone of a large organ, the builders have altered the form and disposition of the pipes, and invented a new species of mechanism. The instrument can be easily removed as it is, or it may be taken to pieces, packed up, and carried anywhere, just like a piano. This new instrument gives the power of uniting all the lower notes in one single pipe, which may thus lead to new mechanical improvements, and open sources of acoustic phenomena.]

The Baristate.

[This instrument can descend two octaves below  to produce such a note, through the ordinary means, the length of 32 feet would be required, besides some mechanical means to blow it. In order to avoid this difficulty, the inventors have substituted a tube 8 feet long, which produces the same effect. It contains six, or even twelve semitones, besides possessing a vibration equal to that of the double bass, and the advantage also of being tuned to any pitch. This instrument has been tried successfully in Florence, with a full orchestra.]

59 **Cuyere, Madame**, *Florence*.

Specimens of combs for silk weaving, from the exhibitor's manufactory in Florence.

60 **Padreddii, F.**, *Pisa*—Manufacturer and Dyer.

Various cotton fabrics from the exhibitor's manufactory. Specimens of cotton dyed in red, from the exhibitor's dye-works in Pisa.

[The exhibitor was the first who introduced power-looms in Tuscany, towards 1848. The exhibitor is also the owner of dye-mills of importance, where 1600 lbs. of thread are dyed weekly.]

61 **Manetti Brothers**, *Navacchio, near Pisa*—Manufacturers.

Various cotton flax and mixed tissues. The exhibitors' establishment is one of the most eminent in Tuscany, and produce various textile fabrics of the highest order.

62 Franceschini, Felice, *Prato*—Manufacturer.

Blankets in floss-silk tissue fabrics from the exhibitor's manufactory in Pisa.

63 Riva & Maffei, *Florence*—Manufacturers.

Brocade of gold and silk, from the exhibitors' manufactory.

64 Catanzaro, Mariano, *Florence*—Manufacturer.

Cotton and silk tissue for carriages. Length of the specimen 10·52 metres, breadth 127 centimeters (32 feet 8 inches by 4 feet).

65 Cini Brothers, *St. Marcello, near Pistoria*—Manufacturers.

Endless felt for paper-making, from the exhibitors' manufacture.

[The felts for paper-making, specimens of which have been forwarded to the Exhibition, are neither woven as those used up to the present time have been, nor sewn, in order to connect the ends; but they are manufactured simply by means of felting the wool, and we believe that this principle for manufacturing felt applied to paper making, was first brought into use at St. Marcello,—an operation quite different from the woollen manufactures, and pregnant with peculiar difficulties. Experience has proved, after a period of five years, in the paper-mills of St. Marcello, that these felts are as good for use as those woven in the French and English manufactures, and that they last longer without being deformed or torn.]

66 Vyse & Sons, *Prato*—Manufacturers.

Plaits and straw bonnets, from the exhibitors' manufactory.

66a Marreti, —, *Mezzana, near Pisa.*

A spring hedge-bill of elaborate workmanship.

67 Nannucci, Madame Agnes, *Florence*—Manufacturer.

Straw bonnets from the exhibitor's manufactory; plaits and various other works in straw.

68 Cini Brothers, *St. Marcello, near Pistoria*—Manufacturers.

Specimens of machine papers, from the exhibitors' manufactory; wove letter-press paper; white laid paper; azured laid paper.

[The paper-mills of St. Marcello, produce papers of every quality. Five specimens only have been selected for the general Exhibition, from papers of a particular description, the making of which is attended with several difficulties.

These are specimens of papers produced by machinery, namely, two of the wove, and three of the laid sorts. One of the former (the foreign post wove) is well sized, although very thin, and without too much transparency; in the latter, the execution of the mark, as in hand-made paper, deserves notice, which lies invariably on the same place, by means of a particular process invented by the exhibitors, and applied most successfully to the manufacture of large quantities.

The two specimens of laid paper of the large size, are noticeable on account of the accuracy and uniformity of the execution, as well as the colouring of the blue sample. As regards the third specimen, of an inferior quality, its resemblance to hand-made paper is considerable, both as to the mark and the edges, which are produced by means of a peculiar machinery.]

68a Mariotti, Silvestro, *Pontedera.*

A sword with the hilt and ornaments in silver-gilt, after the electro-galvanic process; a well-finished, chased work, executed by the exhibitor, and consisting in a hilt, and the design of the sheath in silver-gilt, entirely ornamented with arabesques, symbols and chimeras, according to the style of the 16th century.

[The pommel represents the head of Minerva, in alto-relievo. There are two shields on the sides of the hilt; in one of which a figure of Justice has been chased, and on the other, a lion rising with the sun. These two emblems are remarkable on account of the diminutiveness of their dimensions; they are surrounded with ornaments of fine workmanship.

The guard, of an irregular oval shape, contains two trophies, emblematic of War and Justice, around which ornaments in basso-relievo have been designed, and a winged monster with two heads, the upper part of the space being occupied by a figure of a swan.

The sheath of buffalo's horn, is ornamented with arabesques, the design of which differs on both sides.]

69 Raffelli, P., & Son, *Leghorn.*

Wrought coral neck-lace, carnation or pink (Scherzoso) coloured; consisting of 73 round corals with a clasp, 7¼ ounces in weight. An engraved brooch. A pair of ear-rings *à la Pompeienne*, consisting of ten engraved pieces.

69a Calamia, Prof., *Florence.*

Twelve cases containing the following preparations:—

1 Male torpedo: digestive, circulatory, branchic, and electric organs.

2 Male torpedo: digestive, genital, and renal organs.

3 Male torpedo: sub-cutaneous muscles, mucous tubes, and electric organs.

4 Inferior surface of the integument, displaying the distribution of the mucous tubes of a torpedo.

5 Female torpedo: muscular system and genital organ.

6 Digestive, renal, and genital organs. Spiral intestinal valve, and hepathic vessels of a female torpedo.

7 Female torpedo: nervous system and electric organs.

8 Magnified models of the torpedo's brains, 3 diam.

9 Torpedo: magnified models of the structure of the galvanic columns of the electric organs, 12 diam.

10 Torpedo: magnified model of the ultimate distribution of the vessels and nerves of one of the engravings of an electric column, 400 diam.

11 Torpedo: magnified model of the mucous tubes and sarvian corpuscles, 15 diem. Distribution of nerves on the bulb of a mucous tube, 120 diem.

12 Torpedo: renal system, basis of the brains, ovum, embryo, and magnified model of the blood, 100 diem.

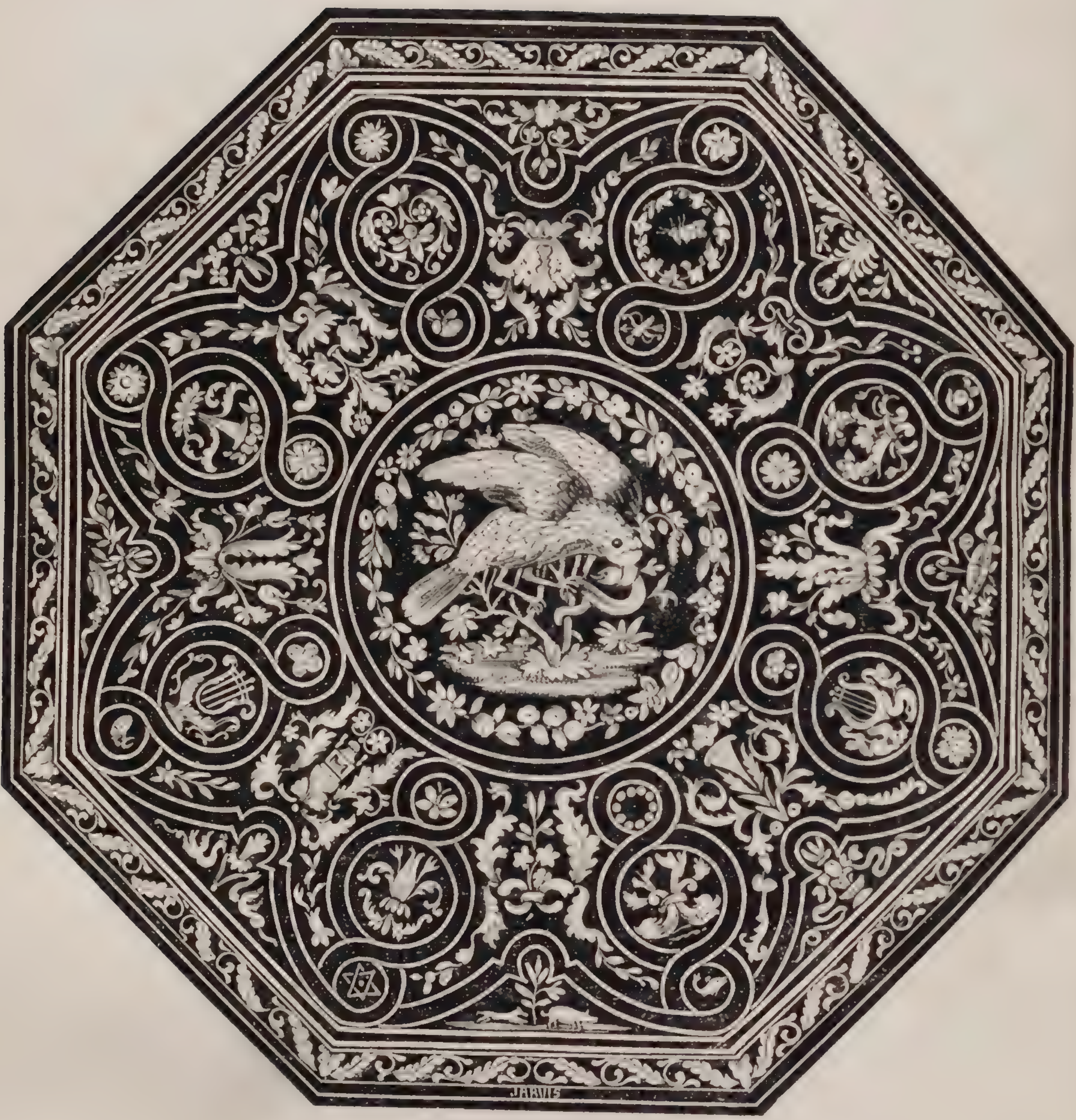
70 Nardi Brothers, *Montelupo, near Empoli*—Manufacturers.

Chemical apparatus in glass, and other objects for domestic and commercial use, from the exhibitors' manufactory.

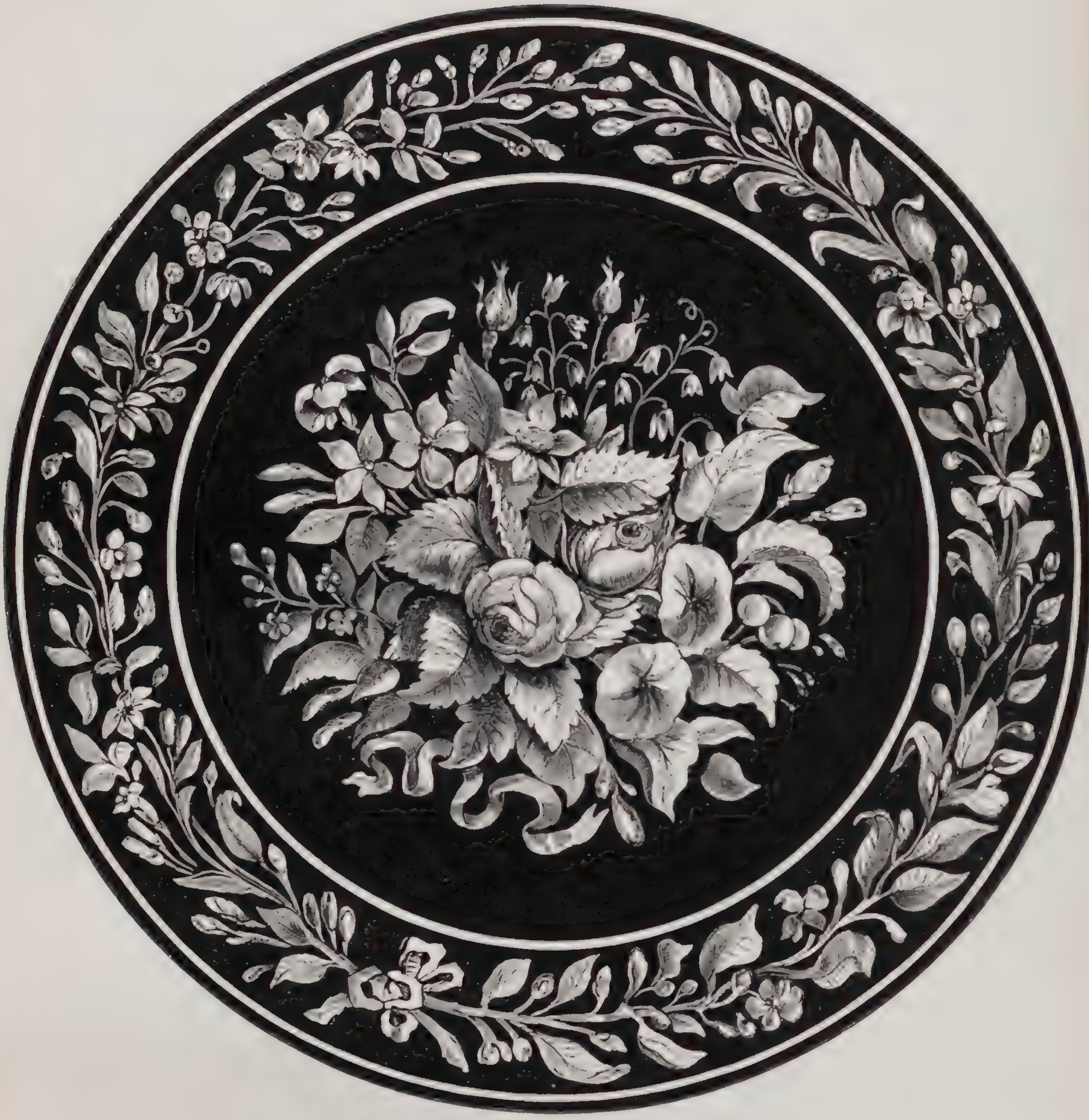
71 Cantagalli, L., *Florence*—Manufacturer.

Stove in terra cotta, from the exhibitor's manufactory. This stove is represented in the cut annexed.

[This stove is a kind of Prussian chimney with its diaphragms, and surmounted by an elliptic column. The

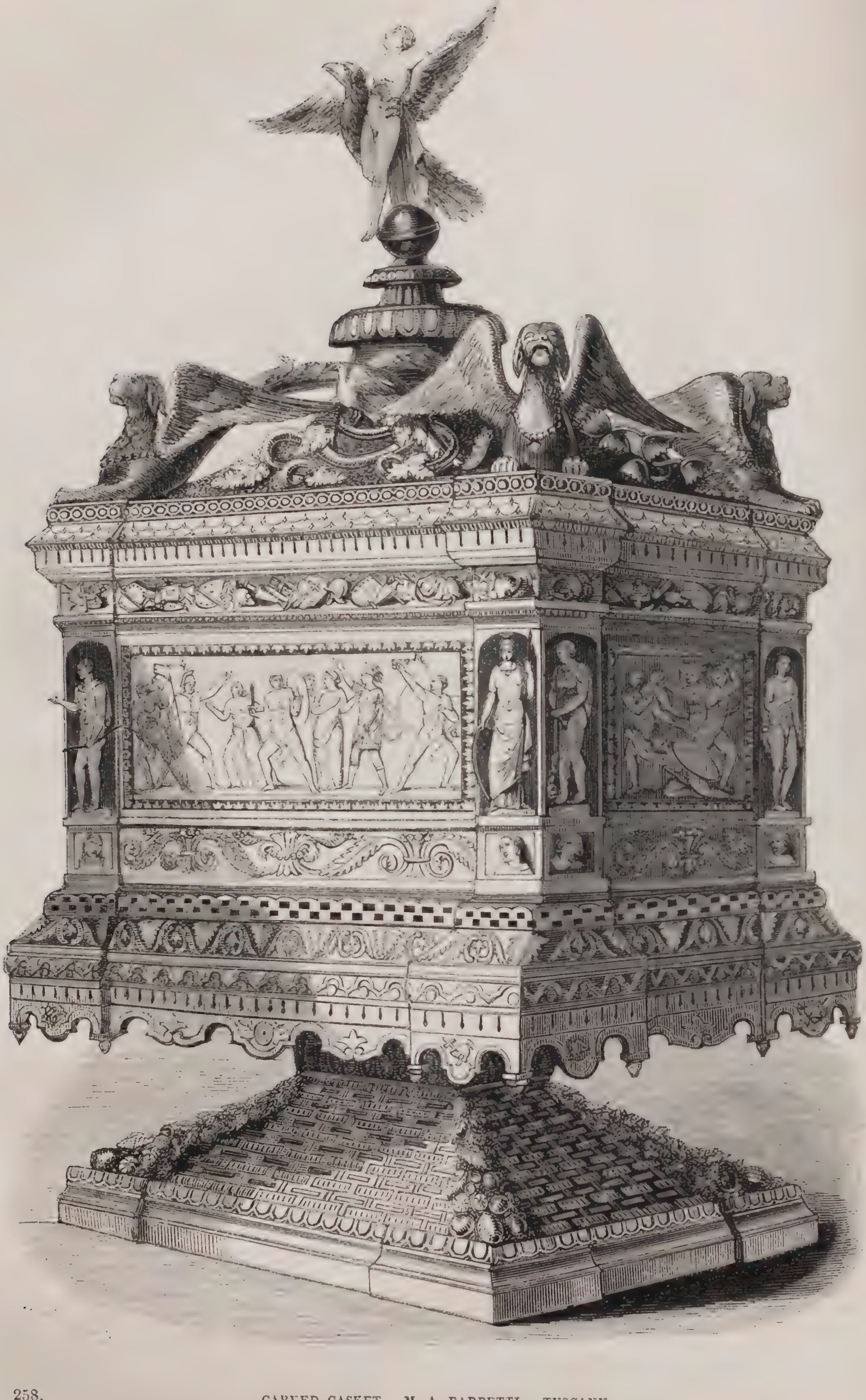


164. INLAID TABLE TOP, IN WOOD. M. E. RAGNINI. TUSCANY.



67.

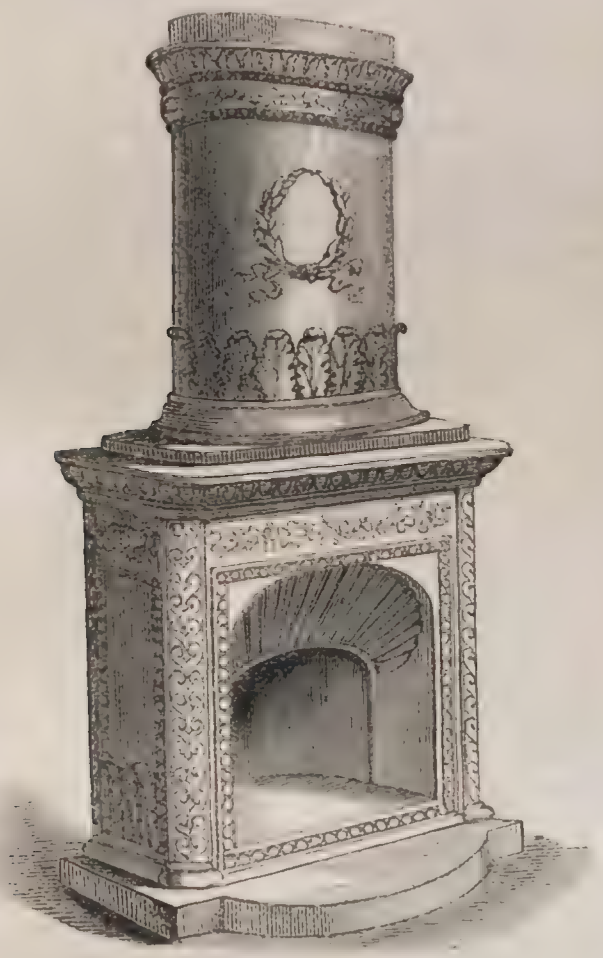
MOSAIC TABLE TOP.



258. CARVED CASKET. M. A. BARBETTI. TUSCANY.

column is fastened to the chimney, and the oval lid to the stove, by means of a certain diluted earth which is sent by the manufacturer.

A vase, or bust, can be placed on the top of the stoves provided that it be not too heavy.]



Cantagalli's Terra Cotta Stove.

72 Ginori, Marquis L., *Florence.*

Several articles in china, from the manufactory on the exhibitor's estate at Doccia, near Florence. The "Rape of the Sabines," after the original painting by Bologna:—"Galileo," from the original by Professor Costoli: Titian's "Flora," reduced to a small picture, from the original painting. A cup, with the portrait of Rubens. A large vase, with a view of the exhibitor's manufactory and country seat.

[All these articles have been executed by young men, sons of the workmen employed in the establishment, who are instructed at a free school, founded and supported by the exhibitor.]

73 Royal Foundry, *Follonica.*

Specimen of cast-iron of the first melting; a tabernacle, the property of H. I. and R. H. the Grand Duke of Tuscany.

Another specimen of cast-iron of the first melting, a flower basket.

74 Barbetti, A. *Siena.*

Grand set of ornamental furniture, in walnut, for a drawing-room, consisting of a console and frame intended for a glass plate, the latter supported by two columns, and terminating in the richest ornaments; a work of an exquisite carving, the architecture in the style of Baldassarre Peruzzi. Small writing table, carved in walnut, revolving upon its basis, after the Greek style.

75 Lombarni, Angelo, *Siena.*

Small frame in wood, with ornaments and figures carved by the exhibitor.

76 Barbetti, Raphael, *Siena.*

Frame in walnut wood, carved by the exhibitor.

77 Barbetti, Rinaldo, *Siena.*

Basso-relievo, carved by the exhibitor.

78 Bigotti, Luigi, *Lucca.*

Two bassi-relievi in ivory, carved by the exhibitor. These are of elaborate execution. One of them represents the "Madonna della Seggiola" by Raffaelo dell Urbino; the other is in the shape of a crescent with figures and ornaments of exquisite workmanship.

79 Marchetti, Luigi, *Siena.*

Frame for a glass-plate, in walnut wood, carved by the exhibitor. It is supported by two columns placed on two crouching lions.

80 Barbetti A., *Siena.*

Dressing-table carved in walnut after the Greek style.

81 Bonaiuti, C., & Sons, *Florence*—Manufacturers.

A study-room chair in the rock wood style. An imitation of china in carved woods, ornamented with gold, and contours, and covered with green woollen velvet.

82 Ducci, Antoni, *Florence.*

Architectural model, executed by the exhibitor to show the application, in marquetrie, of walnut sheets to cornices, however complicated, without being cut at the angles.

Joining of sliding-rules, with grooves very complicated and difficult. Cutting of the walnut wood by means of a new machine, invented and executed by Messrs. A. and M. Ducci, of Florence.

83 Pasqui, Pietro, *Arezzo.*

A cornice in mountain ash, with outlines in ebony, carved by the exhibitor.

84 Falcini Brothers, *Florence.*

A large chair, after the style of the 16th century, inlaid in woods of several colours, forming a rich design of flowers and ornaments.

85 Bonaiuti, C., & Sons, *Florence.*

A lady's writing table in black ebony, inlaid with metals and woods, of various colours, in imitation of mosaic work.

85a Polli, F., *Florence.*

The top of a table inlaid with figures, the Four Seasons, and ornaments after the style of Raffaele.

86 Regnini, Emidio, *Chinsi.*

Octagon top of a table, inlaid in woods of several colours, by the exhibitor, forming a design of flowers and various ornaments. This table-top is represented in plate 164.

87 Maggiorelli Brothers, *Florence.*

Three table tops, with veneering of Tuscany woods.

88 Martinelli, Francesco, *Leghorn.*

A rectangular ebony table, supported by ornamented carved feet, with a top inlaid in various woods and mother-of-pearl.

89 Corridi, P., *Leghorn.*

A square table of angelica with marquetrie; bunch of flowers at each corner, in the centre a large circle in blue silk velvet.

This table consists of a hard wood frame covered up with a veneer of satined angelica. The central disk is executed in blue silk velvet. The bouquets at the corners are inlaid in angelica and composed of various-coloured woods. The bands, one of which contains a small drawer, the feet and casement are executed in the same style; but the capitals placed upon the feet (with inlaid insects), the tips of the feet (ornamented with a leaf), and the vase that joins the casement, consists of solid wood.

The small band round the table is made of pink ebony. Several woods have been used in the inlaid-work with their natural colour; some others have been dyed, but they can never alter, in consequence of the colouring substance penetrating the whole parenchyma.

90 Mazzetti, Aurelio, *Chiusi.*

A frame, inlaid in woods of various colours.

91 Nobili, Cavaliere, *Lucca.*

A base of a column in coloured marble, from the quarries of Santa Maria del Giutice, near Lucca.

92 Guidotti, Giuseppe, *Lucca.*

Three bases of columns in coloured marble, from the quarry of Pescaglia, near Lucca.

Three tables, two round and one rectangular, in coloured marble, from the same quarry.

93 Ghirardesca, Guido Della, Count, *Florence.*

Two tables in red marble, from a quarry belonging to the exhibitor in the Tuscan Maremma.

94 Nanni, Leonardo, *Prato.*

A round table in marble, called "Verde di Prato," from quarries belonging to the exhibitor near that town.

[Amongst the plutonic rocks so abundant in Tuscany the serpentine, from Monte-Ferrato, near the town of Prato, is known as *Verde di Prato.* Mr. Leonardo Nanni has presented some fine specimens of that marble from quarries under his management, which now yield blocks sufficiently large to cut statues, vases, or columns of nearly 1½ cubical metre in diameter. The quality of the marble can be ascertained from a round breakfast service, ¾ metre in diameter. The quarries are in full operation, and any quantity of marble can be obtained from them.]

95 Maffei, Cavaliere Giuseppe, *Volterra.*

A base of a column from the quarry of Monte Rufoli, near Volterra, belonging to the exhibitor. The base is the property of H. I. and R. H. the Grand Duke of Tuscany.

96 Pancialichi, Marquis, *Florence.*

A table of marble, called "lumachella," from the exhibitor's quarry near Florence.

Two small tables, in very hard marble, from the torrent Marnia, near Vallombrosa.

97 Giovannini, Pasquale, *Florence.*

A specimen of sculpture in lithographic stone, from a quarry on the exhibitor's estate.

98 Imperial & Royal Technological Institute, *Florence.*

A table of Cipollino marble, from a quarry in Elba Island.

A broccatello table, from the quarry at Caldana, near Campiglia.

A table of marble, called "Porta Santa," from Caldana di Ravi.

A table of eastern alabaster, from the quarry of Albevire.

Two small columns of broccatello of Caldana, with the capitals in yellow marble from Siena.

A small column of light bardiglio, from the quarries of Campiglia, belonging to M. Michaele Ristori.

99 Giovannini, P., *Florence.*

Lithographic flag-stones from the exhibitor's quarry, at Folle, inlaid with stucco, very hard and resisting any kind of rubbing. A specimen of sculpture from that stone, representing a little orphan girl, executed by M. Emanuel Panini.

100 Ferrigini, Giuseppe, *Leghorn.*

White cable, from the exhibitor's rope manufactory in Leghorn. This cable can be used as a tackle; when placed, vertically, it withstands a weight of 15,188 lbs. (French). Its own net weight is 229 lbs. (French).

101 Parlanti, Ersilia, *Borgo a Buggiano.*

A very elaborate silk embroidery, consisting of several designs irregularly disposed, but producing a striking effect.

102 Tonti, Luigi, *Florence.*

Five canes in small pieces of horn, of various colours with tops in gilt bronze.

103 Ceru, Carlo, *Lucca*—Manufacturer.

Horse's bit of steel, invented by the exhibitor.

104 Cioni, Gasparo, *Empoli*—Manufacturer.

A lock of particular mechanism, executed by the exhibitor.

105 Dupre, Prof. A., *Florence*—Sculptor.

"The Curse of Cain after having murdered his brother Abel." A marble statue by the exhibitor, and cast in bronze by Mr. C. Papi. The property of H. I. and R. H. the Grand Duke of Tuscany, and cast by his order. "Abel murdered by his brother Cain," a statue in marble by the exhibitor, and cast in bronze by Mr. C. Papi. The property of H. I. and R. H. the Grand Duke of Tuscany, and cast in bronze by his order.

106 Costoli, Prof. Aristodemo, *Florence*—Sculptor.

Christopher Columbus unveiling America to the three parts of the world then known, displayed according to their geographical order, forming a group of four figures, modelled in plaster by the exhibitor, and cast in bronze by Mr. C. Papi; the property of H. I. and R. H. the Grand Duke of Tuscany.

107 Villa, L., *Florence*—Sculptor.

Hagar giving drink to her son Ishmael, a group in marble, executed by the exhibitor.

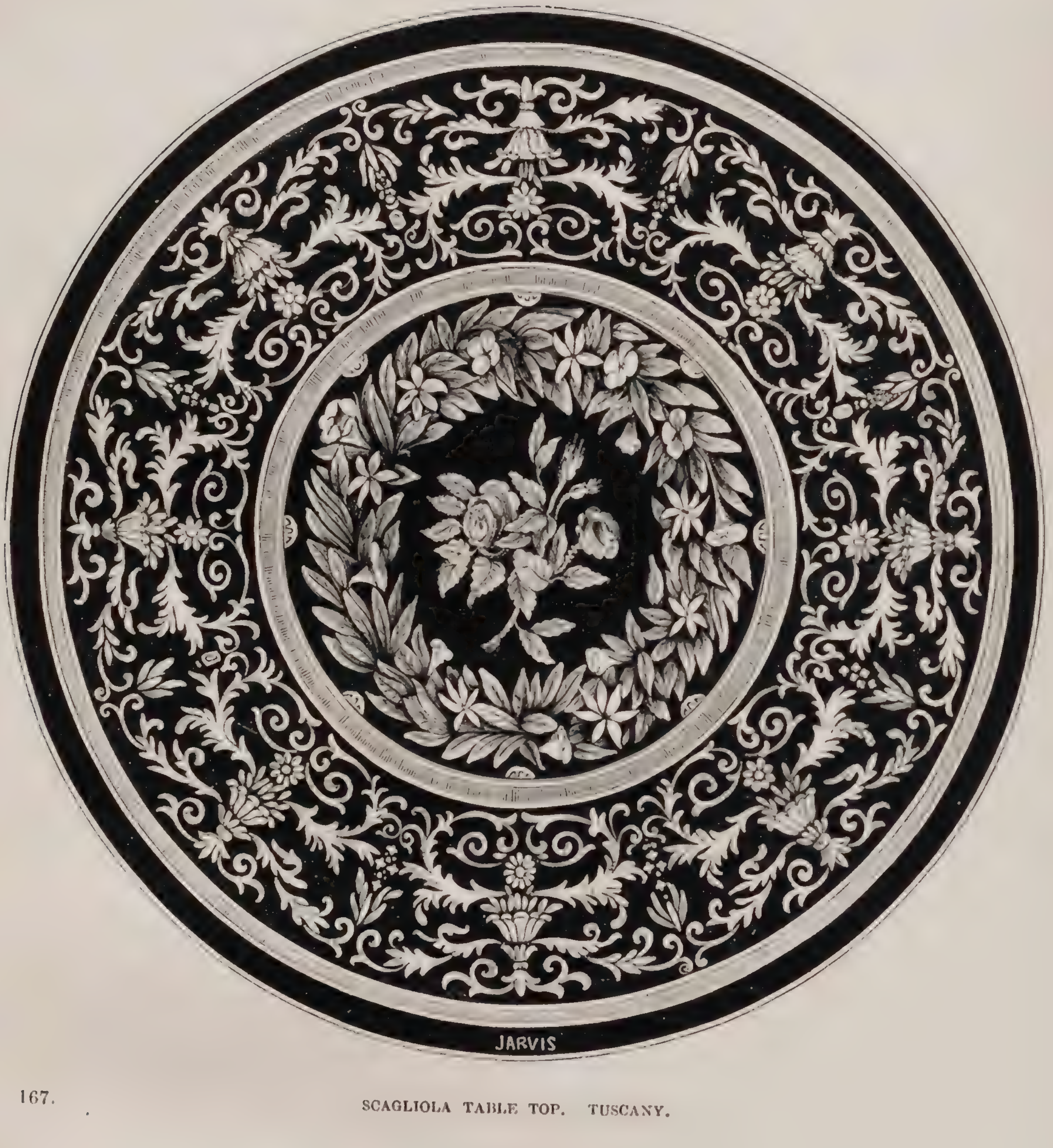
108 Nencini, Prof., *Florence*—Sculptor.

Bacchus, a statue in marble of Seravezza, by the exhibitor. The statue represents Bacchus reclining in a state of intoxication.

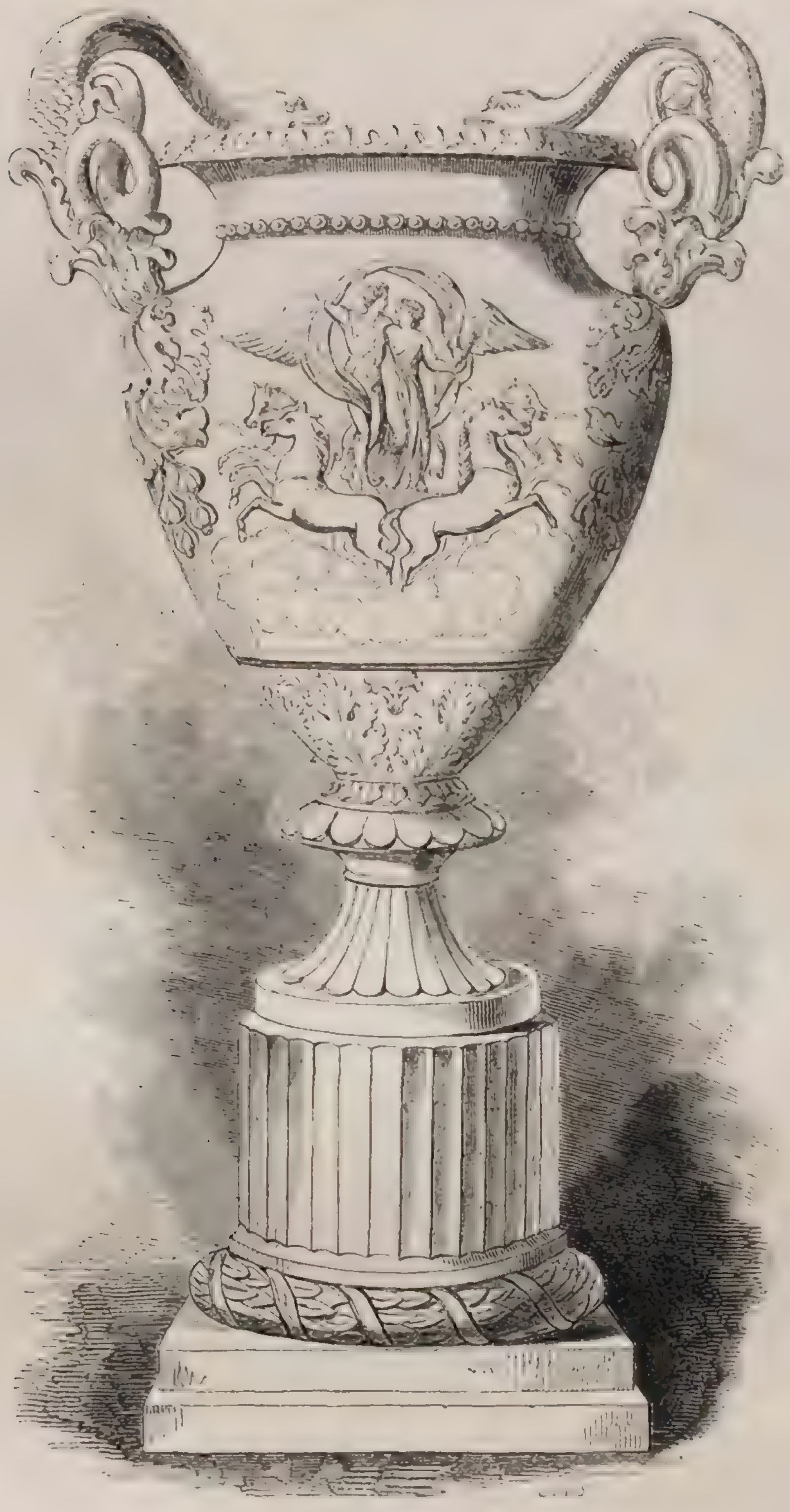
[The plastic model of this work was sent in 1838 to the public Exhibition in Milan, and the Academic Board of that town decided to put it up for competition among the pupils. The author had his name inscribed on the Academicians' list.]

109 Cherici, Giuseppe, & Sons, *Volterra.*

A large alabaster vase, after the Etrurian style; executed in the exhibitors' manufactory in Volterra, and representing—1. Apollo in his quadriga, drawn by four horses, and preceded by Aurora. This vase is represented in the annexed illustration. 2. Justice rising to the heavens. The vase is placed on the fust of a column of the Tuscan order.



167. SCAGLIOLA TABLE TOP. TUSCANY.



Cherici's Alabaster Vase.

110 **Freccio, Pietro**, *Florence*—Sculptor.

Psyche, a statue in marble, with a pedestal, executed by the exhibitor. Psyche has received the fatal vase from Venus, with injunction not to open it. But the lovely girl, in spite of Cupid's warnings, is eager to satisfy her curiosity, though she seems to hesitate.

111 **Royal Manufactory**, known under the name of the **Imperial and Royal Gallery of Hard-Stone Works.**

A mosaic table in hard pebbles, of a circular form, and a diameter of 1·75 metre, (5 feet 5 inches, English) upon a ground of eastern lapis lazuli; the table belonging to H. I. and R. H. the Grand Duke of Tuscany. The centre represents Apollo in his quadriga, surrounded with flowers, supported by clouds, and drawn by four steeds. It is circumscribed by a wreath of roses around its nine compartments (adorned with contours of acanthus leaves), which contain the appropriate emblems of the muses: a large circular band represents 36 bouquets of various flowers, the whole surrounded by another band containing 135 small ornaments, forming an elegant contour.

112 **Buoninsegni Brothers**, *Florence*—Manufacturers.

A round table in scagliola; from the exhibitors' manufactory. The table represents a wreath with a bouquet in the centre, composed of various flowers tied together with a white ribbon. The roses in the centre are cut out of pink chalcedony from Monte Rufoli; lapis lazuli has been used for the convolvulus, and turquoise for the pansies. The leaves are represented with Arno pebbles. The execution of the whole is highly elaborate. This table-top is represented in plate 167.

113 **Bianchini, Guetarno**, *Florence*—Manufacturer.

A round table in mosaic of Florence: the table represents several bouquets. In this elaborate work the exhibitor has been anxious to introduce some fine stones, not generally known, such as the *Arno pebbles*, with the Florentine lily in the centre.

114 **Della Valle Brothers**, *Florence.*

A rectangular table in scagliola, with various ornaments, and entirely inlaid, in imitation of works of hard pebbles, executed in the exhibitors' Scagliola Works, in Leghorn. This slab is represented in plate 168.

A round table in scagliola. The centre tableau represents Galileo visited by Milton in the prison of the Inquisition. The azure zone around contains the signs of the zodiac. The four statuettes executed on medals represent Astronomy, Physic, Mathematics, and Geometry; and the busts some of Galileo's most celebrated scholars. The figures of the children, executed on azure medals, embody four of the inventions and discoveries of the great philosopher, viz., the Pendulum, the Thermometer, the Measuring Compass, the Telescope, and the Satellites of Jupiter, otherwise called the *Medicean Stars.* The octagonal vignettes in *Chiaroscura*, represent the cities of Pisa, Florence, Venice, and Rome, in one or other of which the principal events of Galileo's life occurred. The ornamental part of the table is *à la Raffaël*, and in the interstices may be discovered the globes, celestial and terrestial, the armillary sphere, the planetary system of Copernicus, of which Galileo was a defender, the sextant, the multiplicatory circle, the Theodolite, and the mural quadrant, all instruments connected with the subject of the table. This table is formed of *scagliola* on a base of marble. Each colour composing the ground and the figures of the centre tableau is first inlaid in a single piece and then shaded. The lights (*Parti chiari*) are also all inlaid. The central part of the ornamental work, which is without shades, is inlaid throughout. The rest of it is made like the centre tableau by inlaying large pieces, and afterwards shading them. The figures of children, representing the pendulum, &c., are inlaid likewise *en masse*, and afterwards shaded. The four octagonal vignettes are painted, and the polish on the surface is produced naturally from the materials, as in marble, without the use of any varnish whatever. The rectangular, or oblong table, is entirely inlaid in imitation of *Pietra dura* work. This table-top is represented in plate 182.

A vase in scagliola, entirely inlaid, after the Etruscan style, executed in the exhibitors' establishment.

The vase is made after a pattern of those found in the Roman Campagna, commonly called Etruscan, and is made of *scagliola*, the same material as that employed in the manufacture of the tables. The group of figures which adorn the front represents a concert between Cupid and the Graces. The Cupid is copied from an ancient vase in the Hancarville collection. The three figures on the obverse side are musicians, taken from a vase painted in the works of Passeri.

These figures and ornaments are all inlaid in the various curves of the vase, in order at once to demonstrate the difficulties of the work and the solidity of the material. The polish is natural, as in marble, without the use of any varnish. These vases can be had of any size, shape, or colour.

115 MAZZETTI, A., *Chiensi.*

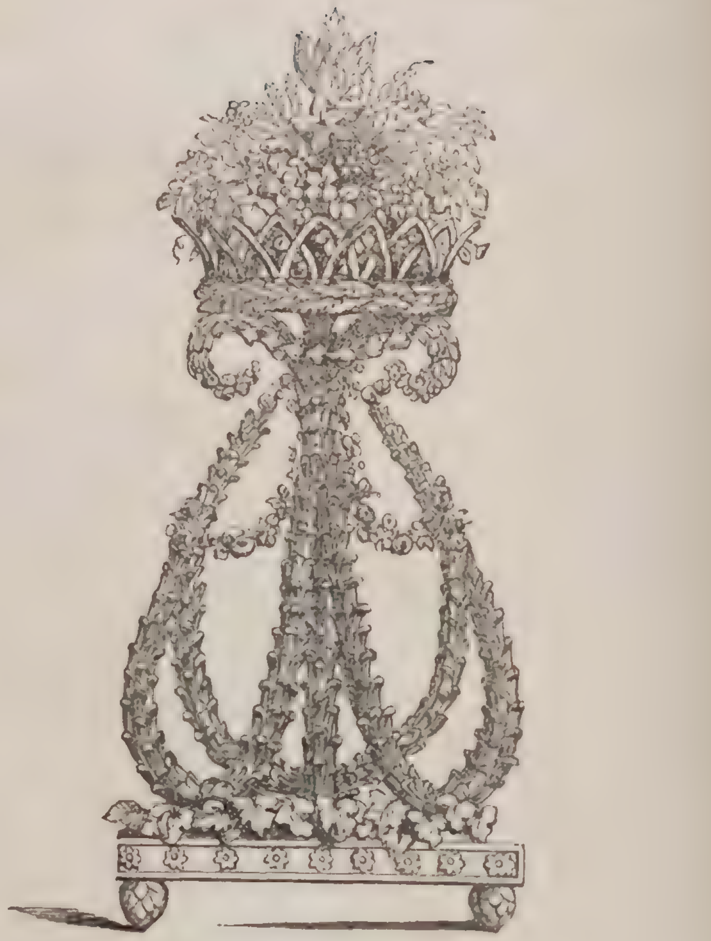
A quadrilateral cornice with the gorge reversed, in black ebony, inlaid with wood of various colours, and executed by the exhibitor.

116 PAPI, C., *Florence.*

A large basket of flowers, taken from nature,—in one cast; with the stand, also from nature, and in a single piece. The whole composed and cast by the exhibitor. The cast consists of several species of leaves and flowers, and it has been executed from the design without any previous operation or modelling. Then, the stay-supporters having been removed, the artist did not apply the file or chisel to perfect his work.

The founder, Clemente Papi, who, after repeated trials, had revived in Tuscany the art of casting bronze statues and bassi-relievi, has also succeeded in taking, with an equal perfection the cast of other natural objects. The basket does not contain apples and other fruits of the same shape; these might have been more agreeable to the eye, but the difficulty was too trifling for the artist.

This specimen of casting is exhibited in the annexed cut.



Papi's Flowers and Stand of Cast Bronze.

117 GIUSTI, P., *Siena.*

A medallion in walnut-wood, carved by the exhibitor.

118, 119 ROMOLI, LUIGI, 6 *York Terrace, Chelsea.*

A rectangular table of scagliola, in imitation of ebony and ivory graving. The central group represents a subject from the Anthology, "The Sale of Loves." The borders are in flowing arabesques.

A round table, in mosaic work and plaster, in imitation of Pietra dura. The borders of various flowers are executed in exceedingly brilliant colours.

A carved pipe tube of black ebony.

120 ROMOLI, LUIGI, *Florence.*

A cherry-stone, representing on one side a wild boar hunt, on the other twenty-five heads.

121 MARCHETTI, L., *Siena.*

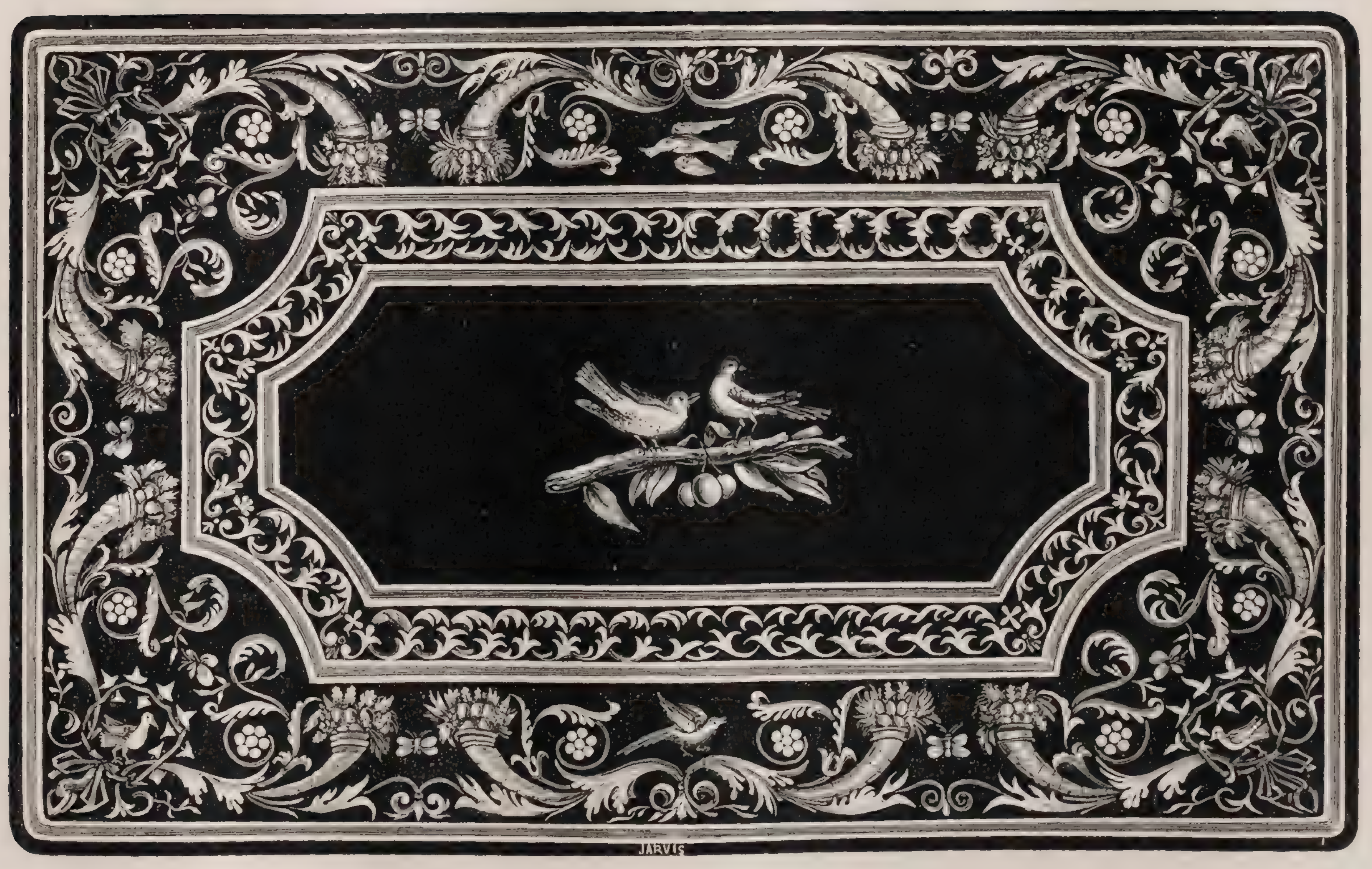
A casket, carved in wood by the exhibitor.

The casket is made of the wood of the service-tree, and in shape octangular, or oblong, the corners truncated.

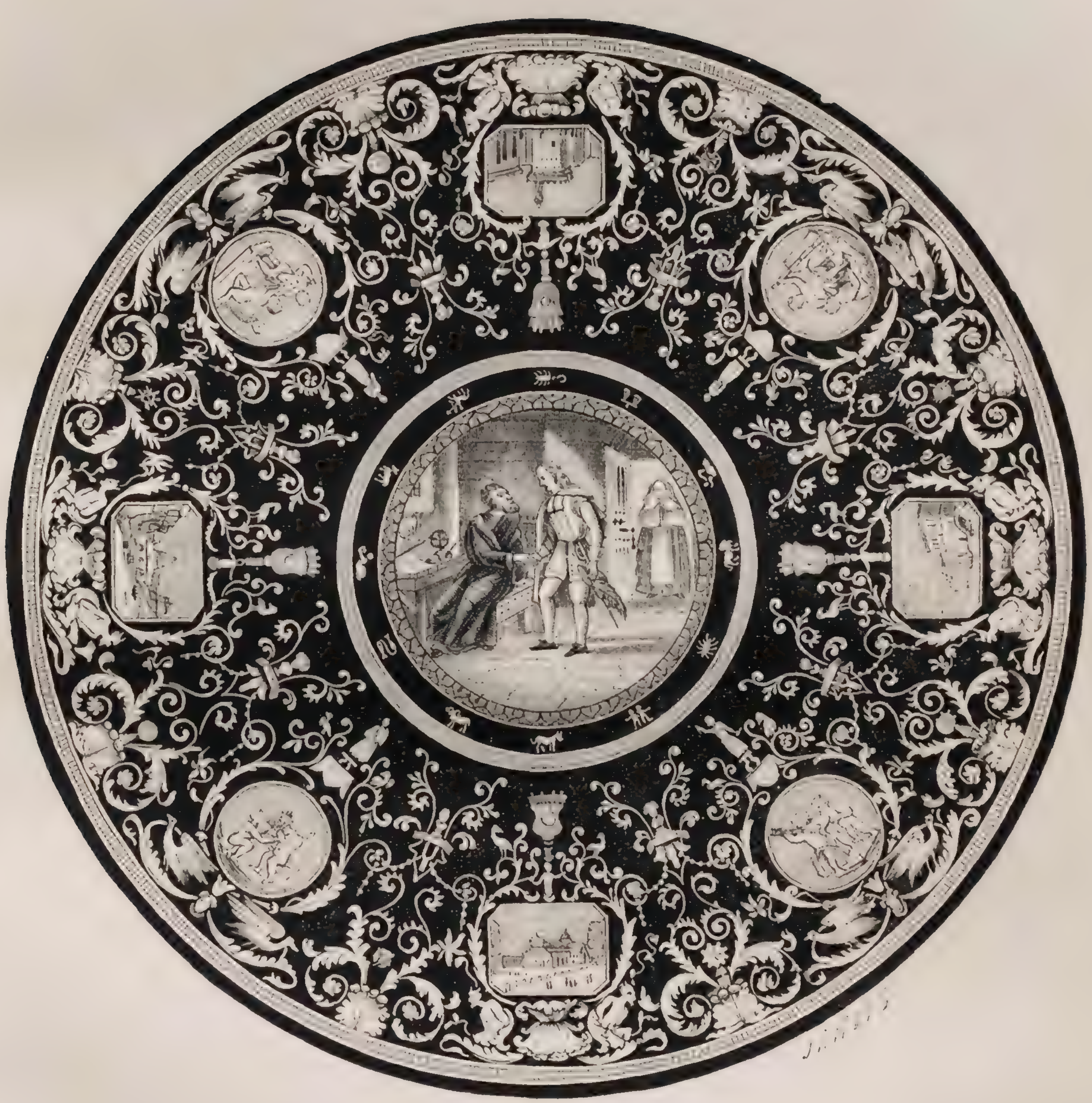
The lid is surmounted with a recumbent female figure, a personification of England, leaning with her left hand on an escutcheon of the United Kingdom, and holding in her right hand an olive-branch,—instruments of industry, trade, and navigation, lying scattered at her feet. Moresques adorn other parts of the lid, and in two circlets like medallions, are grouped the emblems of industry and commerce.

The front and back of the casket are each divided into five panel-like compartments, bordered with ivory, of which compartments the two, on each side, broader than the rest, exhibit, in basso-relievo, prominent events in the history of England;—and the others, candelabra of an elegant design, and exquisitely executed.

Of the two historic compartments of the front, the subjects are, Julius Cæsar having just landed on the British shore, in the year 52 B.C., with a torch in his hand to indicate the civilization of ancient Rome; the other represents King John signing Magna Charta, at Runny-



AN INLAID SLAB FOR A TABLE. MESSRS. DELAVALLE BROTHERS. LEGHORN, TUSCANY.



182. AN INLAID TABLE TOP. MESSRS. DELAVALLE BROTHERS. LEGHORN, TUSCANY.

mede, in the year 1215, at the requisition, and in the presence of the barons of England. On the other side, Sir R. Peel proclaims Free-trade, a broken sword lies at his feet as an emblem of the means the great statesman had first used as a defender of the protection system, which he afterwards disapproved and abandoned. Lastly, Religion, kneeling at the feet of our Saviour, receives the writings of the Evangelists.

Each end of the casket is divided into three other compartments, the centre being the largest. On the left, Queen Victoria drops garlands on the earth, and the opposite side represents Prince Albert. The candelabra are repeated in the four smaller compartments.

A triton, in full relievo, resting on a hippocamp, occupies each of the four truncated corners.

The lock of the casket was constructed by Sig. Pasquale Franci, and the velvet used for the lining was manufactured by Sig. Giuseppe Masotti, both of Siena.

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122 Fontina, Andrea, *Carrara*—Inventor and Manufacturer.

A clarionet and a German flute, made in white marble. The tones produced are of great mellowness and perfection.

A highly finished copy on porcelain, enamelled by Baldissini, after Titian—"Venus Reposing."

A large tazza, surmounting a truncated column, on party-coloured marble.

A carved vase, nearly 4 feet in height, of white alabaster.

A massive bust of Lorenzo il Magnifico, executed in white marble, and having the arms of the Medici, sculptured on the plinth, executed by Professor Costoli, after the original in terra-cotta, by Michael Angelo. (Property of the Rev. Mr. Sanford, exhibitor.)

A statuette of Galileo, in the costume of his age.

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123 Serafino Buonaiuto, *Florence.*

A fine plate, in a frame, executed in the taste prevalent at the beginning of the seventeenth century. It is composed of large lozenge and rhomboidal-shaped pieces of looking-glass, regularly cut, and arranged in a border of considerable depth, after a design by the exhibitor. This glass reposes on a table, carved and gilt in the Louis XIV. style, by Nosotti of London.

SARDINIA

North Areas, F. G. H. 47, 48; I. 48.

Royal Commissioner in London, Chevalier Lencisa, 124 *Mount Street, Grosvenor Square.*
Agents, Messrs. Lightly and Simon, *Fenchurch Street.*

Nearly one hundred exhibitors represent the industry of Sardinia. Their contributions afford a very complete view of the direction in which this activity is principally impelled, and also of some of the materials upon which it is exercised. The mineral specimens include some spathic iron ore, and rough and manufactured slates. The pharmaceutical specimens indicate a refined state of chemical manufacture among these exhibitors. They comprise several alkaloids, the preparation of which involves a considerable amount of scientific knowledge and manipulative skill. Quinine, phloridzine, ergotine, and santonine, are among these preparations. The wools exhibited are specimens selected from valued herds. Coarse black wools are also shown, and garments made from them. Samples of raw and thrown silk, and fine specimens of the products of the velvet looms of Turin and Genoa, form a valuable part of this collection. The elegant articles in filligree and chased silver will receive notice, together with the ornamental furniture and decorative fittings sent from Turin and Genoa. Several other objects of more or less interest will present themselves among these articles.—R. E.

1 **Grange, Francis**, *Randens, near Aiguebelle (Savoy)*—Manufacturer.

Specimens of spathic iron from the mines of St. Georges des Hurtières, and of white crystallized casting for the manufacture of steel.

2 **Zolesi, Stephen**, *Chiavari.*

Manufactures in slate—viz., a round table, polished and varnished; polished school slate; roofing slates.

3 **Pianello, Dominic**, *Chiavari.*

A rough slate fourteen decimetres (5 ft. 6 in.) square.

4 **Selopis Brothers**, *Turin and Brozzo (Ivrée)*—Manufacturers.

Specimens of sulphuric, nitric, and hydrochloric acids.

Sulphates of iron, copper, alumina, and potash.

Pyrites of *Brozzo*, with sulphate of iron prepared from it.

Flowers of brimstone, and sulphur in the mass, obtained from the roasted pyrites.

Residuum from the washing of roasted pyrites.

[When pure volcanic sulphur cannot be obtained cheaply, the roasting of pyrites, which is a native bisulphuret of iron, is resorted to. In order to expel some of the sulphur of this compound, it is merely necessary to heat it carefully in closed vessels, when the sulphur sublimes in the usual form. The residuum is a sulphuret of iron, which can be converted into sulphate of iron or copperas. The specimens exhibited illustrate these various processes.—R. E.]

5 **Girardi Brothers**, *Turin*—Proprietors.

Specimens of colesced, castor, linseed, and walnut oil.

6 **Rossi & Schiapparelli**, *Turin*—Manufacturers.

Specimens of stearine candles; soap made from oleic acid; pure stearic acid; sulphate of magnesia, and carbonate of magnesia, native of Piedmont (Giobertite).

7 **Albani Brothers**, *Turin*—Manufacturers.

Matches for chemical lights; specimens of gelatine extracted from bones; soda soap prepared from the fat of bones; concentrated sulphuric acid for the manufacture of phosphorus; nitric acid; nitrate of barytes, prepared from the sulphate of barytes of Savoy; a retort made of the broken clay of the Castellamonte for the preparation of phosphorus.

8 **Girod, M., & Co.**, *Aiguebelle*—Manufacturers.

Gallic acid, extracted from chestnut wood.

9 **Garrissini, Peter Hyacinth**, *Toirano, Genoa.*

Samples of orange wine.

10 **Saluce, M.**—Manufacturer.

Specimens of various essences; peppermint, crystallized; absynthe, completely colourless; noyeau, crystallized.

Mastic, insoluble in alcohol.

11 **Calloud, Fabian**, *Annecy*—Manufacturer.

Phloridzine, extracted from the bark of the pear-tree, intended as a substitute for quinine.

Santonine, the vermifuge principle of the *semen contra.*

[The medicinal substance called Semen-Contra is obtained from plants belonging to the family of composites. The artemisias of several species furnish the principal portions of this drug. The flower-head is the part of the plant employed. Santonine is a name given to the active principle of the drug, which is valued as a vermifuge.—R. E.]

Morphine, extracted from poppies grown in Savoy.

Glucosate of soda, obtained from the syrup of mulberries; the same obtained from the syrup of diabetes.

Beberine, proposed as a substitute for quinine.

12 Bonjean, Joseph, *Chambery*—Manufacturer.

Pure ergotine in phials, with a small model of an apparatus for the preparation of this medical product; six phials containing specimens of the material in various stages of the manufacture, from the pulverization of the ergoted rye to the pure ergotine.

13 Dufour, Laurence, *Genoa*—Manufacturer.

Samples of sulphate and citrate of quinine.

14 Profumo, Joseph, *Genoa*—Manufacturer.

Specimens of white lead.

15 Simone Mancu, Le Chevalier, *Sassari*—Proprietor.

Olive oil made in 1849 by the ordinary method; olive oil of the best quality made in 1849 by simple compression.

[Olive oil is obtained from the fruit of *Olea Europea.* It is ordinarily procured by crushing the fruit, and then submitting it to pressure. The first product is the finest, being the virgin oil. The oil obtained subsequently is less pure, and has a stronger odour and taste. Hitherto Sardinia has not been distinguished for the quality of this product.—R. E.]

16 Scola, Bernardin, *Turin*—Manufacturer.

Gelatine capsules for medical substances, filled with balsam of copaiba.

17 Pallestrini Brothers, *Villabiscossi* (*Lomellina*)—Proprietors.

Specimens of rice cultivated in Piedmont.

18 Blondel Gaston, & Co., *Turin*—Proprietors.

Specimens of various qualities of rice.

19 Bo, Augustus, *Turin*—Manufacturer.

Specimens of mineral colours; coloured lakes and inks.

20 Prever, John James, *Turin*—Proprietor.

Specimens of undressed wool from a flock of 2000 Merinos.

[The wool of this peculiar breed of sheep has long been celebrated, and is principally employed in the manufacture of articles of clothing.]

21 Brun Brothers, *Pignerol*—Proprietors.

Specimens of washed wool from a flock of 2000 Merinos.

22 Calvi, James, *Genoa.*

Linseed oil and cakes of linseed.

23 Guiso, Michael, *Nuoro*—Proprietor.

Specimens of pure wax and white wax candles.

Specimens of honey, sweet and bitter.

24 Bravo, Michael, *Pignerol*—Proprietor.

Specimens of raw silks, the product of the silk-worms of the valleys of Pignerol and Brianza.

Specimens of organzine, strong and medium dressing (apprêt) with thrown silk, for the manufacture of silk plush, from the same valleys.

25 Sinigaglia Brothers, *Busca*—Proprietors.

Specimens of raw and thrown silk.

26 Jacquet, Henry, & Co., *Latour, Luzerne*—Proprietors.

Specimens of raw and thrown silk.

27 Casissa, Francis, & Sons, *Novi*—Proprietors.

Specimens of raw white silk, of different numbers.

28 Vertu Brothers, *Turin*—Manufacturers.

Specimens of white thrown silk, or *strafilato.*

29 Galimberti, Constantine, *Pella, Novara*—Proprietor.

Specimens of raw silk.

30 Rignon, F., & Co., *Savigliano, Saluzzo*—Proprietors

Specimens of raw and thrown silk for manufacturing silk plush and velvet.

31 Mesina, Salvatore, *Nuoro*—Proprietor.

Black woollen yarn; black raw wool, the production of Nuoro sheep, suitable for manufacturing impermeable stuffs; coarse black woollen cloth (called by the Sardinians *arbaccio*), and grey cloth. Olive oil made in 1850.

[The wool in this instance is of an inferior quality, but its colour is that of the natural fleece.]

32 Rocca, Joseph, *Turin*—Manufacturer.

Two violins, constructed after the models of Guarnerius and Stradiaurius.

[There were three violin-makers named Guarnerius, who flourished circ. 1700; the best was Joseph. Stradiaurius was a pupil of Andreas Guarnerius. Their instruments are considered the finest, and vary in value from 100*l.* to 300*l.*—H. E. D.]

33 Benoit, Anthony, *Cluses* (*Savoy, Faucigny*)—Manufacturer.

Machines for making watch balances; cylindrical escapements; lever escapements; new machine for cutting wheels for escapements.

Specimens of watchwork; repeating and seconds watches, chronometers, &c.; specimens made by the pupils of the clock-making school at Cluses.

New rotary high-pressure steam-engine.

Measuring apparatus to be used on railroads. Its object is to indicate various circumstances incidental to the passage of the train, and particularly its exact velocity.

34 Annecy & Pont—Manufacturers.

Calicoes of different colours and widths; handkerchiefs of Indian style; large size; sarcenet percalina.

35 Rey Brothers, *Turin*—Manufacturers.

Woollen worked cloth for carpets.

36 The Divisional Committee of *Nuoro.*

Coarse woollen cloth (*arbaccio*), red coloured, for petticoats, spencers, &c.; the same for stockings and breeches; black, of inferior quality, for bornuses and capotes.

[This cloth is obtained from the wool of an inferior breed of sheep—the Nuoro sheep. The garments are warm, but coarse and strong.]

37 Fermento, Lewis, *La Rocca, Mantua*—Proprietor.

Specimen of thrown silk (*strafilato à tours comptés*).

38 Imperatori, Joseph Henry, Brothers, *Intra, Pallanza*—Proprietors.

Specimen of organzine silk (*strafilato*).

39 **Chichizola, James, & Co.**, *Turin and Genoa*—Manufacturers.

Assortment of plain and fashioned coloured velvets.

Specimens of figured satins; silk-gros; gros de Paris; glazed silk-gros; and flowered damask.

40 **Soley, Bernard**, *Turin*—Manufacturer.

Specimens of silk of different colours and designs; white and coloured transparent taffetas.

41 **Guillot, Joseph, & Co.**, *Turin and Genoa*—Manufacturers.

Silk plush for hats; piece of velvet, lace embroidery; specimen of velvet for tapestry; a set of *foulards* for robes.

42 **Guillot, Joseph, & Co.**, *Genoa*.

Silk velvets—black, *pensée*, blue, crimson, bears' ear, Raymond blue, spring-green, ruby, emerald-green, puce, blue Hayti, and *mode*.

43 **Molinari, Austin**, *Genoa*.

Black silk-velvet pieces, of finest quality, in the antique style; silk velvet for furniture and hangings; silk damask; satin stuff, and patterns of several stuffs, for furniture.

44 **Defferrari Brothers**, *Genoa*.

Fourteen patterns of silk stuffs and velvets.

45 **Borzone, John**, *Chiavari*.

Two linen towels, commonly called *macramè*.

46 **Durio Brothers**, *Turin*.

Two pieces of leather for soles; one piece for thongs; from Piedmontese and American ox-hides.

47 **Farina Augustin**, *Turin*.

Punches for microscopical typographic characters; a set of punches for different Roman, English, and German types; a sheet with their impressions.

48 **Bayno, Joseph**, *Turin*.

Specimens of different qualities of lace.

49 **Tessada, Francis**, *Genoa*.

Embroidered cambric handkerchiefs in the frames; ladies' black lace mantles; patterns of lace.

Crocco Brothers, *Genoa*.

Embroidered cambric handkerchiefs; frame containing subjects for embroidery; woollen waistcoats.

51 **Forno, John**, *Turin*.

A complete dress for a *soirée*; a groom's dress.

52 **Gullia, John Baptiste**, *Turin*.

A pair of boots, called *à la Chaudron*, for postillions; a pair made of prepared leather, the hair not having been removed; a pair in calf's leather, without seam; a pair in silk, wadded.

53 **Mantaut, Lewis**, *Turin*—Engraver.

Specimen of an engraved copper plate for bill-heads, &c., inoxidable.

[By the latter expression the exhibitor intends to state that the surface of the metal is not affected by the oxygen of the air. But other gases in the air, and particularly a minute quantity of sulphuretted hydrogen, which is always present in the air of towns, exerts a much more powerful effect upon polished metallic surfaces than pure oxygen gas.—R. E.]

54 **Ropolo, Peter**, *Turin*.

A small gaufre-iron door, mounted on mechanical pivots.

55 **Granzini, James**, *Turin*.

Iron bed with elastic mattresses, enclosed in a buffet.

Pattern in wood of a "*bomb à diaphragm*," containing small grenades separated from the gunpowder, and intended to burst after the explosion.

56 **Barbie, Joseph**, *Turin*.

A strong lock for coffers, with cut-out mounting, and a key of only one piece.

57 **Montefiori, Charles**, *Turin*.

A small silver plate with the portrait of Her Majesty Maria Adelaide, Queen of Sardinia, adorned with chased figures in relief.

Bronze medal, cast in the mould of the portrait of His Majesty Victor Emanuel II., King of Sardinia, chased on a silver plate by the exhibitor.

58 **Loleo, James**, *Genoa*.

Several works in silver filigree, among which a monumental column ornamented with emblems, intended to celebrate the era of the Great Exhibition of 1851.

59 **Bennati, Joseph**, *Genoa*.

Figure, with a pedestal, representing Christopher Columbus, in silver filigree.

60 **Lendy, Nicolas**, *Turin*.

Three microscopic dies for stamping *Dorini*, a kind of minute gold ornament of extreme thinness worn by the peasant-women in Piedmont.

61 **Bertinetti, Peter**, *Turin*.

A carriage, with double veneering in wood, mouldings and figures in marqueterie.

A box for a flute, in solid veneering.

Specimen of cylindrical veneering.

62 **Martinotti, John**, *Turin*.

A dressing table, in rosewood.

63 **Martinotti, Joseph**, *Turin*.

Large wood frame, carved and gilt, for a looking glass or picture.

64 **Capello, Gabriel**, *Turin*.

Cornice in pear-wood, carved and ornamented with leaves, flowers, animals, &c. A table, a curule chair, and a pedestal inlaid with various foreign woods, after the Etruscan school; the property of H.M. the King of Sardinia.

Mahogany round table on a triangular stem, with carved figures and masks; the upper part made of white wood, covered with velvet and fringed. The property of His Royal Highness the Duke of Genoa.

Round table in white wood, with a triangular stem carved and gilt; the upper part garnished with crimson velvet and fringed.

A cabinet floor, inlaid with various foreign and indigenous woods, after the Etruscan school.

65 **Griva, Morice**, *Turin*.

A rosewood article of furniture, carved and gilt, applicable as a desk, a toilet, and a work-table for ladies.

66 **Perelli, Andrew**, *Turin*.

A table-sofa, in rosewood and mahogany, carved and ornamented with Chinese marquetrie.

67 **Cuglierero, Raymond**, *Turin*.

Two light chairs on wheels, made with indigenous woods.

68 **Ciaudo, Joseph**, *Nice*.

An oblong drawing-room table in olive-wood, with mosaic surface, representing historical events, inlaid with indigenous woods of the natural colour, forming imitation of oil paintings. This table is supported by a pierced column, ornamented with lions, garlands, and arabesques.

69 Bisso Brothers, *Genoa.*

Round table, inlaid with fine stones and medallions, representing the chariot of the sun, the four seasons, and the signs of the zodiac.

70 Magni, Francis, *Genoa.*

Round table, with inlaid drawers, representing the signs of the zodiac, and a central medallion representing a Neapolitan improvisatore; the stand in the form of columns with dolphins and arabesque lion claws. Made of natural woods and ivory.

71 Speich, Peter, *Genoa.*

Ebony table, in the *renaissance* style. A *Prie-dieu* stool of Indian walnut-tree, in a similar style.

72 Descalzi, Jacques, *Chiavari.*

Round table, inlaid with wood in imitation of marble. Round table, inlaid with small bands of wood of various colours, imitating the tissue called ginghams, with frame made of small pieces of wood imitating marble. Light Chiavari chairs of various forms and colours.

Looking-glass, defended with a preparation to protect the glass from humidity and contact with the air.

73 Da Fieno, John Baptiste, & Montecucco, Andrew, *Genoa.*

Console table, carved and gilt, with a marble slab.

74 Canepa, John Baptiste, *Chiavari.*

Chairs of white wood; others, coloured yellow.

Gothic chairs, of black and white wood.

75 Bourgoin, Berthea, *Turin*—Manufacturer.

Specimen of blacking.

76 Castagneto, Emanuel, *Genoa*—Manufacturer.

White cream of tartar.

[Cream of tartar in the crude state is called argol, and is of a reddish colour. The colouring matter is removed by washing, and by recrystallization white cream of tartar is procured. Chemically it is a monobasic tartrate of potash. —R. E.]

77 Fino, John, *Turin.*

A set of different specimens of brushes.

78 Montu, Joseph, and Co., *Turin.*

Specimens of Piedmontese heath sprigs, for the manufacture of brushes; heath brushes for various purposes.

79 Bafico, John Luc Francis, *Genoa.*

Wooden vases, painted in imitation of Japan wares.

80 Strauss, Jacob, *Turin.*

A set of tobacco-pipes and *porte-cigares* in white talc, carved and ornamented.

81 Valdettaro, Jerome, *Genoa.*

Fifty qualities of fine and superfine pastes, or *vermicellis;* fifty small boxes of sorted vermicellis.

82 Romanengo, George, *Genoa.*

Boxes, containing candied fruits.

83 Comba, Francis, *Turin.*

An elk (*Cervus alces*) prepared according to a new method, by substituting for the usual stuffing a cast, moulded in paper upon the body or upon a model of the animal.—Belonging to the Zoological Museum of Turin.

84 Acquarone, John Baptiste, *Porto Maurizio.*

Liquid citric acid, extracted from the juice of lemons: a new production.

85 Bosio, Anthony, *Turin.*

The arms of the Royal House of Savoy ornamented with trophies carved in wood.

86 Stefani, William, *Turin*—Proprietor.

Two large silk embroidery tableaux, the last work of Bussoni Bernard of Venice.

87 Cavigioli, Charles, *Turin.*

Bronze medals cast with a tenth proportion of pewter. By the process adopted by the exhibitor the metal is said to come out of the mould in such a state that two strokes of the die are only wanting to stamp them completely. Specimens of iron castings.

88 Spanna, Joseph, & Co., *Turin*—Manufacturers.

Specimens of artificial marble, prepared with granite and wood.

89 Chirio & Mina, *Turin.*

A large volume, containing the history of Hautecombe Abbey, ornamented with coloured borders and a number of engravings.

90 Rondelli, Felix, *Nice.*

An obelisk covered with shells and other articles found on the sea-shore, presented as symbolical of Commerce.

91 Scotto, The Chevalier, *Genoa.*

Steel engraving.

92 Frumento, J. B., *Genoa.*

Marble statue, representing a Bacchante.

93 Barbieri, De, *Genoa.*

Superfine paste of vermicelli.

94 Guelfi, —, *Genoa.*

Superfine paste of vermicelli.

95 Gandolfi, —, *Turin.*

A military dress.

96 Domenget, —, *Savoy.*

Specimens of mineral waters.

97 Masera, —, *Turin.*

A collection of surgical instruments.

PORTUGAL

North Areas, G. to J. 45 ; North East Central Gallery, I. 45, 46.

Royal Commissioner in London, Le Chevalier Ribeiro de Sà, 22 *Duke Street, Portland Place*. *Agent*, F. J. Vanzetler, Esq., 5 *Jeffreys Square*.

The collection sent by Portuguese exhibitors is extremely rich in raw materials and produce, and considerable efforts appear to have been made to represent as far as possible the natural resources of a country, the manufacturing capabilities of which remain still to be developed. Some excellent specimens of limonite, a hydrous oxide of iron, much used as a source of that valuable metal, have been sent from Lisbon and from other places. Samples of copper, lead, and antimonial ores are also exhibited. Interest attaches likewise to the lignites, anthracite, and coal exhibited, which indicate available sources of mineral fuel to this country. Chemical manufactures appear to have been more extensively represented than some others. The specimens exhibited are principally those of substances employed in the useful arts, as in glass-making, dyeing, &c. It would be interesting to learn whether among these the strontian is obtained in Portugal. Various kinds of porcelain and fire-clays are also shown. Lithographic stones from various localities, show a new source of this valued substance. A highly interesting and valuable collection is that of the marbles from the Museum of the Royal Academy of Lisbon, and from a mineralogical exploration made by order of Government, and private parties; and it appears to indicate in the strongest manner the vast natural resources of Portugal for these ornamental stones. Some of the specimens shown have great beauty and singularity of veining. A good collection of agricultural products represents the fertility of the soil of this country: wheat of various kinds, maize, haricots, rye, all show the productiveness of the land even under indifferent agricultural management. The dried and preserved fruits, and a number of other vegetable and animal products, deserve attention. The textile manufactures are tolerably represented in cotton, linen, silk, and wool. As a vast specimen of the art of the potter, the great wine, or oil-jar from Alemtejo will receive notice. The vast capacity of similar jars not unfrequently met with in Spain and Portugal is a subject of familiar knowledge. Some works in the precious metals are considered interesting. Some fine carvings in ivory, are indicative of much skill in the execution of such objects. Among vegetable products, attention will be drawn to specimens of tobacco in various states of manufacture, exhibited by the Royal Tobacco Contractors of Lisbon. Various miscellaneous articles also add value and interest to the articles sent by this country.—R. E.

Bonnet, Carlos, *Lisbon*—Producer.

1 Limonite. Hydrous oxide of iron.

[This mineral exists in great abundance in the province of Alemtejo, district of Beja, parish of Aljustrel, place Algares. Vestiges of its having been formerly explored are discovered, but at what period is not exactly known.]

2 Limonite.

[This mineral exists in the province of Estremadura, district of Lisbon, parish of Santiago de Cacem, place Outeiro das Sete Tijelas.]

3 Limonite (pisolitic).

[This mineral is found in great abundance in the province of Estremadura, district of Lisbon, place Algares. Vestiges of exploring operations, which have taken place at different periods, are found, the last appearing to have been in 1620.

The hydrous oxide of iron is presented in nature in various ways, and is known to mineralogists by various names. Of these the limonite of Beudant is an earthy mineral, of brown or yellow colour, containing 80 per cent. of peroxide of iron, and therefore 55 per cent. of iron. It occurs entirely in sedimentary rocks, where it often forms thick masses, belonging to all geological periods, including the most modern. It is much worked in France, and makes excellent iron. It is often oolitic and granular, and sometimes pisolitic, occasionally passing into ochre.—D. T. A.]

4 Magnetic iron ore.

[This mineral is found in the province of Alemtejo, district of Evora, near the place Outeiro da Mina.]

5 Impure carbonate of iron.

[This mineral exists in the province of Alemtejo, district of Beja, parish of St. Amador, place da Crujeira. It is found in the remains of former works, and sometimes it is mixed with small portions of carbonate of copper.]

———

6, 7 Limonite.

8 Yellow ochre.

These three minerals are found in various parts of the province of Minho, district of Vianna.

[Yellow ochre is an earthy variety of limonite, mixed with argillaceous earth, and often with hydrate of alumina. It is much used as a colouring matter, and when calcined becomes *red ochre.* The limonite is described above.—D. T. A.]

BASTOS, JOSE FERREIRA PINTO—Proprietor.

9 Copper ore.

This mineral which has not yet been analyzed, is found in the province of Beira, district of Aveiro, place Mina de Palhal.

10 Copper pyrites. Sulphuret of iron and copper.

Found in the province of Alemtejo, district of Beja, parish of Aljustrel, place S. Joao do Deserto. Various mines are now in full operation.

BONNET, CARLOS, *Lisbon*—Producer.

11 Copper pyrites, with native copper.

Found in the remains of former exploring operations, in the province of Alemtejo, district of Beja, parish of Villa Nova da Baronia.

12 Galena.

Met with in various parts of the province of Minho, district of Vianna.

NAZARETH, ANTONIO JOSE DUARTE, *Lisbon*—Producer.

13 Galena.

Found in the province da Beira, district de Coimbra, parish d'Arganil Serra da Aveleira.

PERSEVERANÇA COMPANY, *Oporto*—Proprietor.

14 Sulphuret of antimony.

[Found in abundance in the province do Minho, district do Porto, parish of Vallongo. This mine was explored a few years ago, and portions of the production sent to England. The workings, for the present, are suspended.]

15 Sulphuret of lead and antimony.

Found in the province of Minho, district of Vianna.

16 Cassiterite.

From the province of Minho, district of Oporto, parish of Rebordoso. This mineral is met with scattered in the remains of inundations, and on the rocks amongst decomposed pegmatite. The works are at present suspended.

[The mineral called by Beudant *Cassiterite* is the common tin-stone of mines, and is an oxide of tin, containing, when pure, 77½ per cent. of metal. The impurities are oxide of iron, silica, and titanium.]

THE COAL-MINING COMPANY OF OPORTO, *Lisbon*—Producers.

17 Anthracite.

Extracted from a mine situated in the province of Minho, district of Oporto, parish of S. Pedro de Cova. The production is abundant, and it is used for domestic purposes, chiefly in Oporto and Lisbon. The mine, which belongs to the State, has been explored for many years, and occasionally it is offered, for a term, by public auction.

ROQUE, JOSE JOAQUIM, *Delgado*—Producer.

18 Lignite.

Found in abundance in the province of Estremadura, district of Lisbon, parish of Lourinha, and generally met with in the remains of eruptions, on the mountains adjoining the ocean. It also exists in many other parts of the surrounding districts.

LACERDA, RAYMUNDO VERISSIMO DE SOUZA—Producer.

19 Coal.

Found in the province of Estremadura, district of Santarem, parish of Valle Verde.

GOULARD, —, Producer.

20 Lignite.

Found in the province of Estremadura, district of Leiria, parish of S. Pedro de Muelo.

[Too little is known of the geology of Portugal to justify any conclusions concerning these lignites. The extent of the deposit is not stated, nor have we any evidence as to the facilities for working mines, should valuable mineral property exist. It is well, however, to direct attention to the subject by the exhibition of these specimens.—D. T. A.]

21 Graphite.

Found in the province of Minho, district of Vianna.

BONNET, CARLOS, *Lisbon*—Producer.

22 Graphite.

Found in the province of Alemtejo, district of Portalegre, parish of St. Salvador, place dos Almagreiros. It exists in abundance; but as yet no use has been made of it.

SUBSERRA, MARQUIS DE—Producer.

23 Asphalt.

Found in abundance in the province of Estremadura, district of Leiria, parish of Alcobaca.

24 Bituminous sand.

This sand forms a portion of the preceding mine, and is used in conjunction with asphalte.

GOULARD, —, Producer.

25 Asphalt.

Found in the province of Estremadura, district of Leiria, parish of St. Pedro de Muelo. It forms a layer of about 60 feet in thickness, and is situated on the edge of the ocean. The mine is now being explored.

26 Sample of the asphalt, worked.

[The asphaltes here exhibited remind the geologist of the beds of bituminous sand used for economic purposes in France and Spain. The material is very valuable, if properly used, in the manufacture of pavements, and for many other purposes.—D. T. A.]

27 Mineral coal.

Found in the province of Estremadura, district of Santarem, parish of Valle Verde.

HIRSCH, J. M. & BROTHERS, *Lisbon*—Manufacturers.

28 Muriatic acid.

This article is extensively manufactured by the exhibitors, near Verdelha, in the province of Estremadura, and it is obtained by the reaction of salt and sulphuric acid. The materials are native products.

29 Sulphuric acid.

This acid is obtained in beds of lead, by the combustion of brimstone with nitrate of soda. The original materials are of foreign production, but occasionally brimstone is imported from the Portuguese possessions.

30 Nitric acid.

Obtained from nitrate of soda and sulphuric acid.

Leal, Francisco Mendes Cardoso, *Lisbon*—Manufacturer.

31 Carbonate of potash.

Obtained by the combustion of argol. The original material is very abundant in Portugal.

32 Cream of tartar.

Obtained from raw tartar or argol.

Ferreira, Agostinho Joaquim, *Porto Brandao, near Lisbon*—Producer.

33 Pure cream of tartar.

34 Cream of tartar, second quality.

35 Red tartar.

36 White tartar.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

37 Cream of tartar, second quality.

38 Pure cream of tartar.

Garland, Laidley, & Co., *Lisbon*—Manufacturers.

39 Cream of tartar, in powder.

40 Grey cream of tartar, second quality.

41 Grey cream of tartar, first quality.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

42 Nitrate of potash.

Correa, Baron de Samora—Producer.

43 Refined sea salt.

Extracted from the waters of the Tagus, at the Marinha Nova, near Lisbon.

44 Refined sea salt, in lumps.

Proprietors of the Salt Works, *St. Ubes*—Manufacturers.

45 Sea salt, in lumps.

46 Sea salt, in crystals.

47 Common salt.

Correa, Baron de Samora—Producer.

48 Sea salt, in crystals.

49 Common salt, in lumps.

This salt is derived from springs in the province of Estremadura, district of Santarem, division of Rio Maior, under which denomination it is known, and it is considered of superior quality.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

50 Sulphate of soda.

Prepared from sulphuric acid and carbonate of soda, both native products.

51 Carbonate of soda.

Extracted from native soda.

Hirsch, J. M. & Brothers, *Lisbon*—Manufacturers.

52 Carbonate of soda.

Extracted from artificial soda.

53 Artificial soda.

Extracted from native productions.

Machado, Francisco Antonio—Producer.

54 Limestone.

From the province of Estremadura, district of Santarem.

55 Grey lime, from the same district.

56, 57 Grey lime.

From the province of Minho, district of Vianna.

Bonnet, Carlos, *Lisbon*—Producer.

58 Siliceous carbonated lime.

From the province of Estremadura, parish of Grandola, near Fontainhas. This calcareous stone furnishes a slightly hydraulic lime.

59 Sulphate of lime.

From the province of Estremadura, parish of Cezimbra.

60 Sulphates of barytes.

From the province of Alemtejo, and parish of Cercal. Evidences of its having been previously explored are occasionally discovered.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

61 Nitrate of barytes.

Used in pyrotechny.

62 Nitrate of strontia. Similarly used.

63 Sulphate of natural iron.

From Vianna do Minho.

Hirsch, J. M. & Brothers, *Lisbon*—Manufacturers.

64 Artificial sulphate of iron (green vitriol).

Extracted from iron and sulphuric acid, and used in dyeing.

Leal, Francisco Mendes Cardoso, *Lisbon*—Manufacturer.

65 Sulphate of iron (green vitriol).

Extracted from pyrites of natural iron, and used in printing and dyeing.

66 Sulphate of copper (blue vitrol).

Extracted from sulphuric acid on copper, and used in dyeing.

67 Ammoniacal sulphate of copper.

Used in pyrotechny.

Hirsch, J. M., & Brothers, *Lisbon*—Manufacturers.

68 Sulphate of copper (blue vitriol).

69 Sulphate of zinc (white vitriol).

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

70 Chloride of tin (salt of tin).

Used in dyeing.

Narzivellia, Maria, *Lisbon*—Manufacturer.

71 White lead. Carbonate of lead.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

72 Nitrate of lead.

Used in connexion with printing.

Leal, Francisco Mendes Cardoso, *Lisbon*—Manufacturers.

73 Chromate of lead.

74 Iodide of potasium.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

75 Acetate of potash.

76 Tartrate of potash and soda (Rochelle salt).

Hirsch, J. M., & Brothers, *Lisbon*—Manufacturers.

77 Chloride of lime.

Leal, Francisco Mendes Cardoso, *Lisbon*—Manufacturer.

78 Red oxide of mercury.

Used in medicine by veterinary surgeons.

79 Corrosive sublimate.

Serzedello & Co., *Margueira, near Lisbon*—Manufacturers.

80 Bisulphuret of mercury.

81 Tartar of potash and antimony (tartar emetic).

82 Quartz latio.

Found in Abrantes, and used in the manufacture of glass.

83 Kaolin.

From the province of Beira, district of Aveiro, and used in the manufacture of porcelain.

84 Felspar Kaolin, from Porto Rio Tinto.

85 Orthose Kaolin, from Porto Rio Tinto.

86 Kaolin, from Porto Rio Tinto.

87 White refractory clay, from the province of Beira, Rio Vouga.

88 Black refractory clay, from the same district.

Bonnet, Carlos, *Lisbon*—Producer.

89 Feldspar (orthose), from the province of Alemtejo, district of Portalegre, parish of Gafete, at Poço da Lança.

90 Red clay, from the province of Alemtejo, district of Evora, council of Estremoz.

It is of this clay that the much-approved earthenware is made, called "Estremoz china."

91 Granite, found in Sines.

92 Granite, from the province of Alemtejo, district of Evora, parish of Corval.

93 Syenite, from the province of Alemtejo, district of Beja, parish of Beringel.

This rock is susceptible of a fine polish.

94 Syenitic granite, from the province of Alemtejo, district of Evora, division of Arraiollos.

95 Syenitic granite, from the province of Alemtejo, district of Beja, council and parish of Serpa, at Pedra Langa.

This stone will bear a fine polish.

96 Syenitic granite, from the province of Alemtejo, district of Evora, division of Monte Mor o Novo.

97 Syenite, from the province of Alemtejo, district of Evora.

98 Diorite, from the province of Alemtejo, district of Portalegre, parish d'Arronches.

99 Hyalomiete passing into mica-schist, and containing amphibole (?) from the parish of Alemtejo, district of Evora, parish of Safira.

100 Granitic syenite, from the province of Alemtejo, district of Portalegre, parish of Alter Pedroso.

This stone, when polished, has a fine effect.

101 Granitic syenite, from the province of Alemtejo, district of Beja, parish of Tourao.

102 Pegmatite passing into protogine, from the province of Alemtejo, district of Portalegre, within the city.

The greater part of the houses are built with this stone.

[This and other collections of material capable of being used in construction and decoration, cannot fail to have great interest, and will induce useful comparisons, on the one hand, as to the relative abundance and variety of certain useful kinds in different countries, and, on the other, as to the real use that is made of such sources of wealth. Many of the stones, especially the porphyries, said to bear a high polish, are certainly very difficult to work, but are still of great use for many purposes. Pegmatite, the last-mentioned rock, is a granite in which the component minerals form very distinct masses closely compacted. Protogine is a granite, of which the mica contains magnesia. It is chiefly and abundantly found in the Alps.—D. T. A.]

103—105 Granite, from the province of Minto, district of Vianna.

106 Quartzose conglomerate, from the province of Estremadura, district of Lisbon, parish of Melides.

This stone is used to make millstones.

Bonnet, Carlos, *Lisbon*—Producer.

107 Calcareo-argillaceous sandstone, from the province of Alemtejo, district of Beja, parish of St. Victoria.

Used in the construction of millstones.

108 Sedimentary limestone, from the province of Alemtejo, district of Beja, parish of Moura.

Used in the construction of millstones.

109 Limestone with serpentine, from the province of Alemtejo, district of Vianna.

This stone will take a beautiful polish.

Dejante, —, *Lisbon*, Producer.

110 Lithographic stone, from Serra D'Arrabida.

111 Lithographic stone, from the province of Estremadura, near Cezimbra.

The Tobacco Contractors—Producers.

112, 113 Lithographic stones, from Serra D'Arrabida.

The Duke de Palmella—Producer.

114 Lithographic stones, from Calhariz.

Dejante, —, *Lisbon*—Producer.

115 Lithographic stones, from Cezimbrz.

[For lithographic purposes, a stone is required having a perfectly smooth and fine-grained face decidedly absorbent. The best and largest of such stones are obtained from the northern part of Bavaria, but many other sources are now known. These from Lisbon had not, however, been known.—D. T. A.]

The Inspectors of Public Works—Producers.

116, 117 Hydraulic clays, from the Azores.

118 Hydraulic volcanic scoriæ.

These three productions, mixed with lime, make an hydraulic bitumen, called Argamassa cement.

Bonnet, Carlos, *Lisbon*—Producer.

119 Serpentine, from the province of Alemtejo, district of Beja, parish of Castro Verde.

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120 A metamorphic rock apparently eurite, from the province of Alemtejo, district of Beja, division of Castro Verde.

Takes a magnificent polish.

121 Limestone crystalline (in France called red-veined marble), from the province of Alemtejo, district of Beja, parish of St. Iria, at Outeiro das Cruzes.

122 Violet marble, from the province of Alemtejo, district of Evora, parish of Estremoz.

123 White marble, from the province of Alemtejo, district of Evora, parish of St. Thiago de Rio de Moinhos.

124 Porphyry, from the province of Alemtejo, district of Evora, council of Vianna.

125 Rose marble, from the province of Estremadura, district of Lisbon, council of Santiago de Cacem.

126 Calcareous breccia, from the province of Alemtejo, district of Portalegre, council of Ponte de Sor.

127 Serpentine with limestone, from the province of Alemtejo, district of Evora, council of Vianna.

128 Rose marble, with green veins, from the province of Alemtejo, district of Portalegre, division of Campo Maior.

129 Rose and white marble, from the province of Alemtejo, district of Beja, Serra de Ficalho.

130 Rose and white marble, with stripes, from the same district.

131 Red marble, with white veins, from the province of Alemtejo, parish of St. Iria Outeiro das Cruzes.

132 Green and white porphyry, from the province of Alemtejo, parish of Castro Verde.

133 Rose marble, with green veins, from the province of Alemtejo, council of Campo Maior.

Dejante, —, *Lisbon*—Producer.

134 Brocatella marble, from the province of Alemtejo.

135 Violet marble, with black veins, from the province of Alemtejo, council of Estremoz.

Museum of the Royal Academy of Sciences, *Lisbon*.

A varied assortment of marbles, including the following:—

136 From Vialonga, at Malto do Conde.

137 From Serra de Monsanto, at Oliveira das Mesquitas.

138 From Oeiras, at Fonte da Carpolina.

139 From Ribeira d'Alcantara, adjoining dos Arcos das Aguas Livres.

140 From the parish of St. Domingos de Rana at Xcrinhos.

141 From Linho, adjoining á Ribeira de Barcarena.

142 From the parish of St. Amaro, adjoining Oeiras.

143 From Rio Seco, adjoining Tapada d'Alcantara.

144 From the parish of Rana.

145 Specimen of a blue colour, from Cintra.

146 From Pimenteira, adjoining Fonte de Caieiro.

147 From within Tapada d'Ajuda, above da Fonte.

148 From the parish of St. Domingos de Rana, adjoining to Matto Largo.

149 From Penhalonga in Cintra.

150 From Pimenteira, adjoining Fonte de Caieiro.

151 From Rio Secco, parish of Ajuda.

152 From Serra de Monsanto, Oliveira das Mesquitas.

153 From Oeiras, at Alberjas.

154 From Pedreira d'Alcolena, at Belem.

155 From Rio Secco, parish of Ajuda.

156 From Serra de Monsanto, Oliveiras.

157 From Oeiras, Calcada do Torneiro.

158 From Pedreira d'Alcolena, at Belem.

159 From Termo d'Alverca, adjoining Alhandra.

160, 161 From Vialonga, near Massasseres.

162 From Vialonga, near the Duke's Quarry.

163 From Vialonga, near Casal dos Bertholos.

164 From Vialonga, near Arroteas do Espragal.

165 From Vialonga, near Almargem.

166 From Vialonga, near Flamenga.

167 From Vialonga, near Penedos dos Negros, parish of Almargem.

168 Specimens, various.

169 From Vialonga, at Fonte do Valle.

170, 171 Miscellaneous specimens, from Vialonga, at Penedos da Olella, parish of Almargem.

172, 173 From Vialonga, River Francao.

174 From Vialonga, Abobereiro.

175 From Vialonga, Cavalleiros.

176, 177 Miscellaneous specimens, from Vialonga, Val do Monte.

178—180 From Vialonga, St. Cruz.

181—183 From Vialonga, Fonte Sancta.

184 From the parish of Bellas, Monte Abrao.

185, 186 From the parish of Bellas, Barouto.

187 From the town adjoining Penella.

188 From the parish of Bellas, Carniceiro.

189 From Villa fria.

190 From Barrocal, adjoining Tavira.

191 From Tavira, province of Algarve.

192 From Sazes de Lorvao.

193 From the parish of Bellas, Cambra.

194, 195 From Villa da Ega.

196 From Salemas.

197, 198 From Caenga.

199 From Villa da Ega.

200 From Barrocal, St. Margarida, near Tavira.

201 From Barrocal Serro do Cavaco, near Tavira.

202 From near Forte das Maias.

203 From Pero Pinheiro, Mafra.

204 From Regueira de Pedrozo, near Aldea do Meio.

205 From Torre da Aguilha, near Casal.

206 From the parish of Tires Cova da Onca, near Acougue.

207 From near Abroil.

208 From Vialonga, near Matto de Domingos Mattheus.

209, 210 Miscellaneous specimens, from Vialonga, near Galvoes.

211 From Vialonga, near Galvoes.

212 From Vialonga, Eira de Poina.

213, 214 Miscellaneous specimens, from Vialonga, near Arroteas Casal das Pilotas.

215, 216 Specimens, various, from Vialonga, near Santa Cruz, Pedreira do Mouco.

217, 218 From Vialonga, near Borda do Matto.

219 From Vialonga, near Matto de Domingos Mattheus.

220 From Vialonga, near Cascalheiras do Espragal.

221, 222 From Vialonga, near Tapada do Conde.

223 From Vialonga, near Rio de Troia.

224, 225 Miscellaneous specimens, from Violonga, at Casal do Sapinho.

226 From Vialonga, at Carrapito de cima.

227 From Vialonga, at Rigango.

228 From Vialonga, at Calhandriz.

229—231 Miscellaneous specimens, from Vialonga, at Cascalheiras do Espragal.

[It is evident, from the magnitude and beauty of this collection, that Portugal is remarkably rich in marbles, of which many are of singular beauty. No doubt a large proportion are subject to veins and flaws, and can be obtained in large blocks or slabs of considerable magnitude, but of the rest there is, no doubt, ample variety. —D. T. A.]

DEJANTE, —, *Boa Vista, Lisbon*—Producer.

232 Breccia, from Serra d'Arrabida.

233—244 Miscellaneous specimens of marble.

245 Breccia, from Serra d'Arrabida.

246, 247 Various specimens of marble.

FIGUIREDO, JOAQUIM DE—Producer.

248, 249 Marble, from Vianna da Alemtejo.

DEJANTE, —, *Lisbon*—Producer.

250, 251 Specimens of marble.

FIGUIREDO, JOAQUIM DE—Producer.

252—257 Specimens of marble.

BONNET, CARLOS, *Lisbon*—Producer.

258 Marble mosaic, composed of sixty specimens, and various ornamental stones, all of the province of Alemtejo. Executed in the manufactory of Dejante, Lisbon.

[The inlaying in marble, shown in this specimen, is probably intended to illustrate the variety of the marbles of one locality rather than the condition of the art of mosaic in Lisbon.

In this light it deserves attention. The workmanship does not pretend to go beyond the geometrical forms usual in the infancy of the art of mosaic.—D. T. A.]

259 White marble, from the province of Alemtejo.

260 Marble, from the province of Alemtejo, district of Beja, Serra de Ficalho.

261 Specimens of marble.

262 Green breccia, from the province of Alemtejo, district of Eovra, at Roncao.

DEJANTE, —, *Lisbon*—Producer.

263, 264 Slabs of white marble, with black veins; appearing similar to glass.

BONNET, CARLOS, *Lisbon*—Producer.

265 Slab of rose-coloured marble, with veins; prepared as glass, in the manufactory of Dejante, Lisbon; appearing very transparent.

DEJANTE, —, *Lisbon*—Producer.

266 Black marble, from Cintra.

267 Red marble, showing white shells.

268 Black and white marble, from the province of Alemtejo, district of Evora, council of Estremos.

269 Yellow and white marble.

270 White marble, of delicate rose colour, from the province of Alemtejo, district of Evora, council of Estremos.

271, 272 White and black marble.

273 Dark-blue marble.

274 Slate-stone, from the province of Alemtejo, district of Evora, council of Estremos.

275, 276 Fire-bricks, from the manufactory of Oporto, at Bulhao.

277 Fire-bricks, from the manufactory at Janelles Verdes, Lisbon.

278 Fire-bricks.

Bastos, Jose F. P., *Vista Alegre, near Aveiro*—Manufacturer.

279—293 Fire-bricks.

[The fire-bricks exhibited by this and the preceding exhibitor appear to be of excellent material and well made. The raw material is not shown, but it must be of good quality, and free both from iron and from alkaline earths. —D. T. A.]

294 Flints, from Rio Maior.

295, 296 Grindstones, from Bragança.

297 Lobeiro wheat (hard), used for Italian paste, from the province of Estremadura.

298 Hard-binding wheat, from the province of Estremadura, district of Lisbon.

Ficalho, Marquis de—Producer.

299 Hard wheat, from the province of Alemtejo, council of Serpa.

Roque, Jose Joaquim, *Delgado*—Producer.

300 Hard wheat.

Ficalho, Marquis de—Producer.

301 Hard wheat, from the province of Alemtejo, council of Serpa.

302 Hard wheat, from the province of Beira, council of Figueira.

303 Hard straw wheat (Greek seed), from the province of Estremadura, district of Santarem; of good quality for dough or paste.

304 Hard wheat, from the province of Alemtejo.

Fonte Boa, Viscount de—Producer.

305 Common hard wheat, from the province of Estremadura, district of Santarem.

306 Hard black-bearded wheat, from the province of Estremadura.

Benagazil, Viscount de—Producer.

307 Hard grey wheat.

308 Giant wheat, from the province of Alemtejo, district of Evora.

309 Ear of giant wheat, from the province of Alemtejo, district of Evora.

Azevedo, Joaõ Rodriques de—Producer.

310 Brook wheat, fourth quality.

311 Soft wheat, from Gollegã.

Xavier, Anselmo Manuel—Producer.

312 Wheat, first quality, from Benavente.

313 Soft wheat, from Benavente.

314 Soft wheat, from Setubal.

315, 316 Soft wheat, from the island of Graciosa, Azores.

Ficalho, Marquis de—Producer.

317 White tender wheat.

Almeida, Joaõ. Vincent de—Producer.

318 Wheat, second quality, from the province of Estremadura, district of Santarem.

Silva, Antonio da, jun.—Producer.

319 Sample of wheat, from Benavente.

320 Soft wheat, from Alcacer.

321 Soft wheat, from the island of Graciosa, Azores.

322 Soft wheat, from Figueira.

323 Hard wheat, from Figueira.

Benagazil, Viscount de—Producer.

324 Soft wheat, from the province of Estremadura, boundary of Lisbon.

Boa, Viscount de Fonte—Producer.

327 Wheat, from the province of Estremadura, district of Santarem.

Benagazil, Viscount de—Producer.

328 Common hard wheat, from the province of Estremadura, boundary of Lisbon.

329 Hard wheat.

330 Soft wheat flour.

331 Rye, from the province of Minho.

332—334 Various samples of rye.

Ficalho, Marquis de—Producer.

335 Rye, from the province of Alemtejo, council of Serpa.

336 Rye, from the province of Beira, Castello Branco.

337 Rye flour.

338 Maize, from the province of Minho, Vianna do Castello.

Benegazil, Viscount de—Producer.

339 Maize, from the province of Estremadura, boundary of Lisbon.

340 Maize, from the province of Beira, Castello Branco.

341 White maize, from the province of Minho Caminha.

342 White maize, from the province of Minho.

Costa, Rodrigo da—Producer.

343 White maize, from the province of Estremadura, district of Santarem.

344 White maize, from the province of Minho Vianna.

345 Yellow maize, from the province of Alemtejo.

346 Yellow maize, from St. Michael's.

Ficalho, Marquis de—Producer.

347 Yellow maize, from the province of Alemtejo, council of Serpa.

348 Yellow maize, from the province of Minho Caminha.

Silveira, Jose Peixoto da—Producer.

349 Yellow maize, from the province of Estremadura, district of Santarem.

350 Yellow maize, from the province of Minho, Vianna do Castello.

351 Barley, from the province of Estremadura.

352 Samples of barley.

Albuquerque, Antonio Saraiva—Producer.

353 Barley, from Beira.

354 Barley, from Alemtejo.

355 Barley, from Estremadura, Lisbon.

Ficalho, Marquis de—Producer.

356 Barley, from Alemtejo, Serpa.

357 Oats, from the same district.

358 Oats, from Alemtejo.

[The province of Alemtejo, and part of Estremadura which is called the Ribatejo, are the most abundant in wheat, whilst maize is chiefly grown in Minto and Beira Alta. Beira Baixa and Traz os Montes chiefly produce rye, whilst the cultivation of oats is almost entirely confined to Alemtejo, where they are grown on the plains called Campo d'Ourique.]

Carvao, Antonio Frederico—Producer.

359 Yellow kidney-beans, from Estremadura, Santarem.

Soares, Vicente Carlos Vaz—Producer.

360 Yellow kidney-beans, from Estremadura, Abrantes.

361 Yellow kidney-beans, from Minho, Vianna do Castello.

362 Red zebra kidney-beans, from the same district.

363 Red zebra kidney-beans, from Beira, Castello Branco.

Henriques, Antonio—Producer.

364 White kidney-beans.

365 White kidney-beans, from Minho, Vianna do Castello.

Benegazil, Viscount de—Producer.

366 White kidney-beans, from Estremadura, boundary of Lisbon.

Carvao, Antonio Frederico—Producer.

367 White kidney-beans, from Estremadura, Santarem.

Soares, Vicente Carlos Vaz—Producer.

368 Zebra kidney-beans, from Estremadura, Abrantes.

369 Zebra kidney-beans, from Minho, Vianna do Castello.

Silva, Jose Peixoto da—Producer.

370 Kidney-beans, from Estremadura, Santarem.

Proenca, T. Tavares d'Almeida—Producer.

371 Kidney-beans, from Beira, Castello Branco.

372 Kidney-beans, from Minha, Vianna do Castello.

Cæsar, Jose—Producer.

373 Spanish peas, from Estremadura, Santarem.

374 Spanish peas, from Estremadura, Azambuja.

Ficalho, Marquis de—Producer.

375 Spanish peas, from Alemtejo, Serpa.

Benegazil, Viscount de—Producer.

376 Spanish peas, from Estremadura, boundary of Lisbon.

377 Broad-beans, or Windsor beans.

Boa, Viscount da Fonte—Producer.

378 Large Windsor beans, from Estremadura, Santarem.

379 Samples of peas.

380 Specimens of lentils.

Bonnet, Carlos, *Lisbon*—Producer.

381 Samples of Carol beans.

Ficalho, Marquis de—Producer.

382 Various lupins.

383 Specimens of lupins.

384 Rice, produced from Carolina seed, in Estremadura.

385 The same, from Estremadura, Coina.

Belmonte, Count de—Producer.

386, 387 Rice, produced from Carolina seed, in Estremadura, Otta.

388, 389 Rice in the shell.

Soares, Vicente Carlos Vaz—Producer.

390, 391 Millet, from Estremadura, Abrantes.

392 Sweet almonds, from Algarve.

Brettes, Manoel F.—Producer.

393 Hard almonds, from Estremadura, Torres Novas.

Fonseca Vaz, Alexandre Pinto da—Producer.

394 Filberts, from Estremadura, Santarem.

395 Walnuts, from Estremadura, Torres Novas.

396 Walnuts, from Estremadura, Sardoal.

397 Walnuts. 398 Nuts.

399 Peeled dried chestnuts, from Beira Castello, Branco.

Ficalho, Marquis de—Producer.

400 Sweet acorns, from Alemtejo, Serpa.

Nogueira, Aires de Sa—Producer.

401 Arachides, from Estremadura, boundary of Lisbon.

Batalha, Francisco Rodrigues—Producer.

401a Arachides, from Angola.

Benagazil, Viscount de—Producer.

402 Ricinus (carrapateira), from Estremadura.

403 Dried figs.

404 Dried pears.

405 Dried plums.

Fonseca Vaz, Alexandre Pinto da—Producer.

406 Dried plums, from Estremadura, Sardoal.

Alves, Estevar Jose da Silva—Producer.

407 Dried cherries.

408 Dried plums.

409 Dried grapes (raisins).

Mendes, Rodrego Pereira—Producer.

410 Dried peaches, from Estremadura.

Fonseca Vaz, Alexandre Pinto da—Producer.

411 Dried peaches, from Estremadura.

412 Preserved plums.

413 Preserved figs.

414 Preserved peaches.

415 Preserved pears.

416, 416*a* Preserved apricots.

All from Tras os Montes, Villa Real.

The Nuns of Coimbra—Producers.

417 Preserved fruits, of various sorts, from Beira Coimbra.

Gomes, J. L.—Producer.

418—420 Dried figs, from Algarve.

421 Preserved peaches, from Estremadura, Lisbon.

422 Preserved figs.

423, 424 Quince marmalade, from Estremadura, Lisbon.

425 Preserved plums, from Estremadura, Lisbon.

426 Preserved pears, from Estremadura, Lisbon.

427 Preserved peaches, from Beiro Coimbra.

428 Preserved plums, from Estremadura, Lisbon.

429 Preserved apricots.

430 Preserved tangarines.

431 Preserved figs.

432 Preserved cherries.

433 Preserved peaches.

The last five articles from Estremadura, Lisbon.

434 Sugared almonds, from Moncorvo, Tras os Montes.

435 Sugared crisp almonds.

436 Preserved citron, from Estremadura, Santarem.

437 Preserved Seville oranges, from Estremadura, Santarem.

438 Preserved pears, from Estremadura, Lisbon.

439 Almonds cased with chocolate.

Ficalho, Marquis de—Producer.

440 Olives, from Alemtejo, Serpa.

Fonte Boa, Viscount de—Producer.

441 Black olives, from Estremadura, Santarem.

442 Black olives, from Beira, Guarda.

443 Black olives, from Estremadura, Lisbon.

444 Olives, from Elvas.

445 Capsicums.

445a Guinea pepper.

446 Coffee, from Madeira.
447 Coffee, from Angola.
448 Coffee, from Mosambique.
449 Coffee, from Timor.
450 Coffee, from Cape Verde.
451 Coffee, from St. Thomas's.
452 Capers, from Estremadura.
453 Starch, from Alemtejo, Evora.

HOLBECHE, MANOEL MARIA—Producer.
454 Starch, from Estremadura, Santarem.

BASTOS, FERREIRO PINTO—Producer.
455 Lump sugar, in loaf, from Estremadura, Lisbon.

456 Lump sugar, in loaf.
456A Pounded sugar.
457 Samples of sugar.

BATALHA, FRANCISCO RODRIGUEZ—Producer.
458 Gum copal, from Angola.

459 Pitch, from Estremadura, Santarem.

CALHEIROS, JOAQUIM LOPES—Producer.
460 Olive oil, from Estremadura, boundary of Lisbon.
461 Sample of olive oil.

PROENÇA, F. TAVARES D'ALMEIDA—Producer.
462 Olive oil, from Beira Castello Branco.
463, 464 Samples of olive oil.

MACEDO, JOAQUIM JOSE DA COSTA—Producer.
465 Olive oil, from Estremadura, Gollega.
466 Samples of olive oil.

LARCHER, JOAQUIM—Producer.
467 Olive oil, from Alemtejo, Portalegre.
468 Sample of olive oil.

FARROBO, COUNT DE—Producer.
469, 470 Olive oil, from Estremadura, Alhandra.

PINTO, JOSE BORGES—Producer.
471, 472 Olive oil, from Alto Douro, Folgoso.

ALMEIDA, SILVA, & CO.—Producers.
473 Olive oil, from Estremadura, Lisbon.

474—477 Various samples of olive oil.

MELLO, J. D'ALBURQUERQUE—Producer.
478, 479 Olive oil, from Beira.

ALMEIDA, SILVA, & CO.—Producers.
480 Olive oil, from Estremadura, Lisbon.

FICALHO, MARQUIS DE—Producer.
481, 482 Olive oil, from Alemtejo, Serpa.

LINHARES, COUNT DE—Producer.
483, 484 Olive oil, from Estremadura, Alpiarca.

485, 486 Olive oil, from Minho, Vianna do Castello.
487—489 Oil of sweet almonds.
490 Nut oil.
491, 492 Castor oil.

BURNAY, —,—Producer.
493, 494 Oil from the Purgueira tree, Estremadura, Lisbon, in Alcantara.
495 Linseed oil, from Estremadura, Lisbon, in Alcantara.

BATALHA, FRANCISCO RODRIGUES—Producer.
495A Arachide oil, from Angola.

BURNAY, VICENTE—Producer.
496 Linseed oil, from Estremadura, Lisbon.

BATALHA, FRANCISCO RODRIGUES—Producer.
496A Palm oil, from Angola.

LEAL, F. MENDES CARDOSA—Producer.
497 Essential oil of lavender.
498 Oil of rosemary.
499 Oil of juniper.
500 Oil of lemon.
501 Citric acid.
502 Tartaric acid.

HIRSCH, J. M., & BROTHERS—Producers.
503 Oxalic acid.

SERZEDELLO & CO.—Producers.
504 Tartaric acid.

BATALHA, F. RODRIGUEZ—Producer.
505 Orchilla wood, from Angola.

506 Orchilla rock, from Angola.
506A Orchilla wood, from St. Thomas.
507 Orchilla wood, from Mozambique.
507A Orchilla rock, from Minho Vianna do Castello.
508 Orchilla rock, from Cape Verde.
508A Orchilla rock, from Madeira.

BATALHA, FRANCISCO REIZ—Producer.
509 Orchilla wood, from Estremadura, Cabo de Roca.

MONTEIRO, MANOEL BAPTISTA—Producer.
510 Sumach, from Beira Guarda.
511 Sumach, from Algaroe.

512 Sumach, in powder.
513 Samples of sumach.
514 Bark of the cork tree.

LEAL, F. MENDES CARDOSO—Producer.
515 Absolute alcohol.
516 Sarsaparilla, from Santarem.

NORBERTO, P. F., *Lisbon*—Producer.
517 Capsules of copaiba, from Estremadura, Lisbon.

BOA, VISCOUNT DE FONTE—Producer.
518 Mustard seeds, from Estremadura, Santarem.

519 Maccaroni, from Estremadura, Lisbon.
520—528 Italian pastes of various kinds, and samples of vermicelli.
529 Biscuits of different sorts, for shipping, from Estremadura, Lisbon.

THE DUKE OF PALMELLA—Proprietor.
530 A hemp tree, from the model farm conducted by Mr. Gaghardi.
531, 532 Prepared hemp.
533 Raw flax.
534 Specimens of flax.

FICALHO, MARQUIS DE—Producer.
535 Fibre of aloes or thread of aloes, from Alemtejo, Serpa.

536, 537 Rushes, from Estremadura, Santarem.
538 Raw cotton, grown near Lisbon.
539, 540 Raw cotton, from Algarve.

BATALHA, FRANCISCO RODRIGUES—Producer.
541 Manioca, from Angola.
542 Manioca powder.
543 Tapioca.

HOLBECH, MANOEL MARIA—Producer.
544 Thistles, from Estremadura, Santarem.

545, 546 Toothpicks, from Marquezinhas.
547 Toothpicks (called double flowered), from Coimbra.
548 Toothpicks, from Lisbon.
549 Toothpicks (called double beaked), from Coimbra.
550, 551 Toothpicks (called single flowered), from Coimbra.

FICALHO, MARQUIS DE—Proprietor.

552 A box made of different varieties of woods.

The box was manufactured by workmen in the villages, and the woods were produced on the exhibitor's estate.

THE INSPECTOR-GENERAL OF PUBLIC WORKS.

553 Pine wood, from Leiria.
554 Plum-tree wood, from Caldas do Rainha, Leiria.
555 Filbert-tree wood, from Collares, near Lisbon.
556 Olive-tree wood, from Santarem.
557 Chestnut-tree wood, from Alemtejo, Portalegre.
558 Wild pine, from Caldas da Rainha.
559 Elm or osier, from Santarem.
560 Mulberry-tree wood, from Lisbon.
561 Olive-tree wood, from Santarem.
562 Pine wood, from Leiria.
563 Beech-tree wood, from Lisbon.
564 Ash-tree wood, from Lisbon.
565 Cherry-tree wood, from Lisbon.
566 Cypress-tree wood, from Santarem.
567 Cork-tree wood, from Villa Viçosa, Evora.
568 Holm wood, from Lisbon.
569 Poplar wood, from Lisbon.
570 Oak timber, from Minho.

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571 Cherry-tree wood, from Minho.
572 Plane-tree wood, from Minho.
573 White acacia wood.
574 Olive-tree wood.
575 Walnut-tree wood.
576 Orange-tree wood.
577 Box-tree wood.

The five last-named specimens all from Santarem.

LOULE, MARQUIS DE—Producer.

578 Azarola, from the exhibitor's estates at Villa do Rey, near Setubal.

579 Carol bean-tree wood, from Algarve.

FONSECA VAZ, ALEXANDRE PINTO DA—Producer.

580 Wood of the arbutus tree, from Santarem.

BASTOS, PINTO—Producer.

581 Wood of the wild olive tree, from Lisbon.

ROYAL MARINE ARSENAL.

582 Wood of the common pine, from Matas Nacionaes de Leiria.
583 Pine wood, from Leiria forests.
584 Pine wood, from Caparica, adjoining Lisbon.
585 Oak timber.
586 Wood of the cork tree, from Alemtejo.
587 Wood of the ash tree, from Alemtejo.
588 Wild mahogany, from the Bissao Islands.
589 Wood of the Couta tree, from the Bissao Islands.
590 Tacula wood, from Angola.
591 Teak wood, from Goa.
592 Sico wood, from Goa.

The woods exhibited by the Inspector-General of Public Works, from No. 553 to 570, were cut in the year 1843 for the purpose of ascertaining their strength for the building of edifices. Those exhibited by the Royal Marine Arsenal (from No. 582 to 592), are employed in naval constructions. Of all the woods of the continent, as well as of the possessions, there is a great abundance: there are, however, certain trees to which a preference is given in the provinces of the north of Portugal, as the chestnut, the poplar, the oak; in the Alemtejo, the cork tree, the palm tree, the olive tree. The best pine is from the Royal Naval National Forests, near Leiria, and extending to ten square leagues.

MATTOS, J. B. DE—Producer.

593, 594 Honey, from Santarem.
595 Honey, from Castello Branco.

FICALHO, MARQUIS DE—Producer.

596 Honey, from Serpa.
597 Honey, from Bragança.
598 Honey, from Evora.

NORBERTO, P. F., *Lisbon*—Producer.

599 Capsules of cod-liver oil, from Lisbon.

CORREA, VALERIO GOMES—Producer.

600 White merino wool, from Covilha.

FICALHO, MARQUIS DE—Producer.

601 Black wool, from Serpa.
602 Black wool, from Braganza.
603 White wool, from Serpa.

THE DUKE OF PALMELLA—Producer.

604—610 Yellow raw silk and white raw silk.

These samples were produced by silkworms bred at the exhibitor's estate in Calhariz, near Setubal.

GARCIA, JOSE CARDOZO—Producer.

611—615 Yellow raw silk, produced at Bemviver, Varzea do Douro.

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616 Yellow raw silk, from Bragança.

CARVALHO, MANOEL LUCAS DE—Producer.

617 Sample of white wax.

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618 White wax, from Castello Branco.

FICALHO, MARQUIS DE—Producer.

619 Yellow wax, from Serpa.

BRETES, MANOEL FERREIRA—Producer.

620 White wax, from Torres Novas.

FICALHO, MARQUIS DE—Producer.

621 White wax, from Serpa.

BRETES, MANOEL FERREIRA—Producer.

622 Yellow wax, from Torres Novas.

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623 Samples of yellow wax.

CARVALHO, MANOEL LUCAS DE, *Lisbon*—Producer.

624 Yellow wax.

NORBERTO, P. F.—Producer.

625, 626 Varieties of gelatine.

FONSECA, JOAQUIM LOPES TAVARES DA—Producer.

627 Glue, from Santarem.

PEIXOTO, JOAQUIM CESARIO—Producer.

628 Glue, from Lisbon.

BASTOS, JOSE F. PINTO, *Lisbon*—Producer.

629 Large animal charcoal.
630 Fine animal charcoal.

BASTOS, FERREIRA PINTO, *Lisbon*—Producer.

631 Decimal scales, made by a Portuguese workman in the establishment of the exhibitor.

POLICARPO, ANTONIO, *Lisbon*—Manufacturer.

632 Agricultural implements (connected with cutlery).
633 Case of surgical instruments.

CERQUEIRA, MANOEL JOZE DA SILVA, *Guimaraes, Minho*—Producer.

634 A variety of scissors.

The manufactories of Guimaraes supply the greatest part of Portugal with these articles.

ROYAL MILITARY ARSENAL, *Lisbon*.

635 A portable blunderbuss, which may be used either as a carbine or pistol, as the stock can be detached.

636 A Roman gun.

637 An improved gun, having tubes on each side of the barrel, one being for powder and the other for shot, and capable of containing a sufficiency for thirty charges. Invented by P. Zodimo.

638 Gun, with percussion locks and a magazine for the powder. Manufactured by Jose de Freitas.
639 A gun, with covered locks.
640 Model of a rifle, which may be used either with percussion caps or flints. Manufactured by Joaquim Jose dos Santos.

Bobonne, Domingos Joze de Azevedo, *Lisbon*—Producer.

641, 642 Leather covers for the locks of cannons.
643 Improved cannon locks.
644 Carronade locks, with improvements.
645 Improved screw for the touch-holes of cannons.
646 Hatchets for infantry corps.

Loureiro, Antonio Gomes, *Thomar*—Producer.

647 Cards for carding fine cotton.
These cards are made by hand, and are used in the exhibitor's manufactory.

Neves, Alexandrino Jose das, *Lisbon*—Producer.

648 Mould to cast three typographical letters, with spring and matrix.
649 Matrix bag for the moulds of three letters, and mould for improving type.
650 Moulding for measuring type.
651 Mould for casting type.

Spinning and Weaving Company, *Torres Novas, Estremadura.*

652 A key from Santarem, made by a working locksmith.
653 Linen thread, from Vianna, Minho, made by hand.
654 Linen thread, bleached, from Vianna, Minho.
655 Sail-cloth canvas.
656 Canvas for sails.
657 Ravensduck.
The three last articles being similar to those manufactured for the Royal Portuguese Navy.
658—660 Samples of sail-cloth.
661—664 Fancy linen drill.
665 Duck, with stripes.
666 Plain ravensduck.
667 Linen bed-ticking.
668 Ordinary bed-ticking.
669 Bagging sack-cloth.
670 Ravensduck.
671 Ravensduck, second quality.
672 Superior linen sheeting.
673 Fine linen sheeting.
674 Ordinary sheeting.
675, 676 Linen cloth sheeting.
677 Ordinary ravensduck.
The former six articles all manufactured in Vianna.
678 Superfine linen cloth.
679 Fine linen cloth, from Guimaraes, district of Braga, Minho.
680 Brown linen drill, from Torres Novas.
681 Brown drill, from the same place.
682 Cotton and linen drill.

Barboza, Joze, *Oporto Mills*—Manufacturer.

683 Cotton drill, and cotton and silk shawls.

Weaving Company, *Lisbon*—Manufacturers.

684—700 Fancy cotton drills.
701, 702 Scotch plaids.
703, 704 Ordinary calico.
705, 706 Bed-ticks.
707—712 Cotton shawls.

Pereira, Jacinto da Silva, *Porto*—Producer.

713, 714 Cotton shawls.

Spinning and Weaving Mills, *Lisbon*—Manufacturers.

715 Cotton blankets.

Loureiro, Antonio Gomes, *Thomar*—Producer.

716 Cotton thread, No. 20.
717 Cotton thread, No. 24.
718 Skeins of cotton thread, single and unbleached.
719 Cotton thread, No. 44.
720 Cotton thread balls, No. 42.

Spinning and Weaving Mills, *Vizella, near Oporto*—Manufacturers.

721 Unbleached cotton thread.
722 Cotton thread, bleached.

Spinning and Weaving Mills, *Lisbon*—Manufacturers.

723 Samples of cotton warping twist.
724 Samples of weft.
725 Skeins of blue and white cotton thread.
726 Skeins of blue tambour thread.

Loureiro, Antonio Gomes, *Thomar*—Producer.

727 Cotton stockings.

Miranda, Batalda, & Co., *Lisbon*—Producers.

728—737 Printed cottons, dark-blue ground.
738—747 Printed cottons, white ground.

Moller & Weike, *Bemfica, near Lisbon*—Producers.

748—755 Printed cotton handkerchiefs, of various colours.

Luz, Filippe Jose da, *Rio de Monro, near Cintra.*

756—760 Printed cotton handkerchiefs, of different colours.
761—769 Printed cotton shawls.

Pinto & Co., *Ponte Nova, Alcantara, near Lisbon*—Producers.

770—774 Printed cotton shawls.

Luz, Filippe Jose da—Producer.

775, 776 Printed cottons.

Pinto & Co., *Ponte Nova, Alcantara, near Lisbon*—Producers.

777—786 Printed coloured cottons.

Larcher & Co., *Portalegre, Alemtejo*—Producers.

787, 788 Superfine green cloth, and superfine black cloth, both made of Saxony wool.
789 Mixed cloth, made of Spanish wool.
790 Cloth, mulberry colour, made of Spanish wool.
791 Cloth, bronze colour, made of Spanish wool.
792 Dark-blue cloth, Spanish wool, second quality, for military uniforms.
793 Coarse woollen cloth, Saragossa wool.
794 Superfine black kerseymere, Saxony wool.
795—797 Ordinary kerseymere, Portuguese wool, second quality.

Valerio, Gomes Correa, & Brothers, *Covilha*—Producers.

798—800 Blue cloth.
801 Green cloth.
802 Cloth, chestnut colour.
803, 804 Coarse woollen cloth.

Campos, Mello, & Brothers, *Covilha*—Producers.

805 Checked cashmere.

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806 Striped woolsey.
807 Linsey-woolsey.
808 Stout white woollen cloakings.
All from Vianna do Minho.

Corsino, Joaquim da Fonseca, *Guarda, Beira*—Producer.

809 A blanket.

Lafaurie, P. A., *Alemquer, near Lisbon*—Producer.

810—813 Various blankets.
814—826 Woollen shawls, of various colours.
827—831 Check shawls, of two colours.
832—839 Printed woollen shawls.
840 Cotton and woollen tartan.
841, 842 Ponchos. 843—850 Woollen caps.

Daupiaz & Co., *Calvario, Belem, near Lisbon*—Producers.

851, 852 Ponchos.
853—855 Wool and cotton waistcoat pieces.

856—859 Wool, silk, and cotton vest pieces.
860—863 Woollen Scotch plaid.
864, 865 Scotch plaid, wool and cotton.
866—871 Tartan shawls.
872—875 Woollen net shawls.
876—881 Printed woollen shawls.
882 Wide Spanish sash belts.
883 Narrow Spanish sash belts.
884 Ordinary Spanish sash belts.
885, 886 Children's net woollen jackets.
887—889 Net comforters.
890, 891 Wool and silk shawls.
892, 893 Wool and silk table covers.
894 Medium carpet.
895—904 Various carpets.

LIMA, JOSE MARIA DE, *Porto*—Producer.
905 Gold cloth.
906, 907 Silver cloth.
908 Gold and crimson cloth.

CARVALHO, GUILHERME RICARDO DE, *Lisbon*—Producer.
909 White and gold damask.
910 Crimson and gold lustring.
911 Purple and gold lustring.
912 Purple and gold damask.
913 Blue llama, starred with gold.
914 Llama, colour of smooth broom.
915 Llama, white broom.
916 Crimson llama.
917 Green llama.

MOREIRA, MANOEL CUSTODIO, *Oporto*—Producer.
918 Sample of black velvet.

CARVALHO, RAIMUNDO JOAQUIM DE, *Oporto*—Producer.
919 Broad black velvet.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
920 Piece of velvet, for waistcoats.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
921 Piece of Scotch velvet, for waistcoats.
922, 923 Checked velvets, for waistcoats.
924 Striped velvet, for waistcoats.
925 Black velvet.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
926 Sample of black satin.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
927 Sample of black satin.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
928 Light-blue figured satin.
929 Embroidered satin, for waistcoats.
930 Lady's worked satin dress.
931—934 Embroidered satin, for waistcoats.

PIMENTEL, JOAQUIM MARCELLINO, *Lisbon*—Producer.
935 Gros de Naples, with satin stripes.
936 Black watered gros de Naples.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
937, 938 Striped and shot gros de Naples.

MARTINS, RAIMUNDO JOAQUIM, *Oporto*—Producer.
939 Gros de laine.
940—942 Fancy shot silks.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
943, 944 Gros de Naples shot silk.
945 Gros de Naples, with green satin stripes.
946 Dark gros de Naples, with satin stripes.
947 Coloured serge, with satin stripes.
948 Double black silk.

BARBOZA, J., *Oporto*—Producer.
949, 950 Silk, for dresses.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
951 Black grogram, for waistcoats.
952 Blue grogram, for the same.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
953 White satin.

RAMOS, FRANCESCO ANTONIO, *Lisbon*—Producer.
954 Patterns of different silks.

DA SILVA, JOAQUIM JOSE, *Oporto*—Producer.
955 Black, and blue and black, silk shawls.

MOREIRA, MANOEL CUSTODIO, *Oporto*—Producer.
956 Embroidered black satin shawl.

MARTINS, RAIMUNDO JOAQUIM, *Oporto*—Producer.
957 Satin neckerchiefs.
958 Large black handkerchiefs.
959 Men's satin handkerchiefs.

CARNEIRO, DOMINGOS FRANCISCO, *Oporto*—Producer.
960 Embroidered silk neckerchiefs.
961 Ladies' coloured striped silk handkerchiefs.
962 Black silk neckerchiefs.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
963 Shot cord-silk cravat.

PIMENTEL, JOAQUIM MARCELLINO, *Oporto*—Producer.
964 White watered silk.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
965 Quilted damask, crimson and gold colour, for furniture.

DA SILVA, JOAQUIM JOSE, *Oporto*—Producer.
966 Yellow damask.
967 Crimson damask.

JORGE, MANOEL JOAQUIM, *Lisbon*—Producer.
968 Men's plain silk stockings.
969 Silk caps.
970 Silk net frock.
971 Grogram ribbons.
972 Damask carriage linings.

BORGES, SOTERO ANTONIO, *Lisbon*—Producer.
973 Hat, trimmed with silk, with loop.
974 Beaver hat, trimmed, without loop.
975, 976 Silk hats.
977 Beaver hat.

ROXO, FRANCISCO DA COSTA, *Lisbon*—Producer.
978 White beaver hat.
979 Black beaver hat.
980 Two leather caps.
981, 982 French silk plush hats.
983, 984 Portuguese silk plush hats.

HIRSCH, J. M., & BROTHERS, *Lisbon*—Producers.
985 White beaver hat.
986 Black beaver hat.

TOJAL, COUNT DE, *Abilheira, near Lisbon*—Producer.
987 Printing-paper.
988 Blotting-paper.
989 Writing-paper.

RODRIGUEZ, J. FRANC, *Porto*—Producer.
990 Samples of ropes.

DA SILVA, MANOEL ANTONIO, *Lisbon*—Producer.
991—1014 Varieties of shot.

BACHELAY, JOAQUIM, *Lisbon*—Producer.
1015 Cast-iron garden-seat.
1016 Black cast-iron vase.
1017, 1018 Cast-iron vases.
1019 Section of cast-iron balcony.
1020 Specimen of cast-iron ornament.

PINTO & SOUZA, *Lisbon*—Producers.
1021 A diamond enamelled brooch.

MAMEDE BERNARDINO, G., *Oporto*—Producer.
1022 A set of amethysts in gold filigree work.
A brooch and pair of bracelets, set with amethysts.

A brooch and pair of ear-drops of filigree work.
Two gold chains.

Rodrigues, Jose, *Oporto*—Producer.
1022a Silver snuff-box.

Franco, Antonio de, *Oporto*—Producer.
1022b A filigree chain.
1022c A gold chain.

Alfonso, Manoel Joaquim—Producer.
1023—1029 Various decanters.
1030—1036 An assortment of tumblers.
1037—1043 A variety of wine glasses.

Bastos, Jose Fereira Pinto, *Vista Alegre, Aveiro*—Producer.
1044—1046 Painted glass.
1047 Basin and jug, gilt porcelain.
1048 Ornamental tureen.
1049 Painted tureen, bistre.
1050 Painted sauce tureen.
1051—1074 An assortment of plates and dishes, of different patterns and sizes, gilt, and variously ornamented with paintings, &c.
1075—1090 Cups and saucers, of various colours and patterns, ornamented and gilt.
1091 A tea-service, white and gold, containing twenty pieces, viz., a tea-pot, coffee-pot, sugar-box, milk pot, butter-cooler, slop-basin, two plates, and twelve cups and saucers.
1092 A tea-service, green and gold, containing twenty similar pieces.
1093 Basin, with cover, and plate.
1094 Porcelain night-lamp.
1095 Ornamental basin, with saucer.
1096 A variety of china door-handles.
1097 A tureen, gilt.
1098 A vegetable-dish.
1099 A foot-pan.
1100 A fruit-stand.
1101—1104 Dishes of various sizes.
1105—1108—Dinner and dessert plates.
1109 A stoneware bottle.

1110 A large earthen wine or oil jar, from Alemtejo. Some of these jars are made to contain upwards of six pipes.

[These vessels of simple form, used for holding oil, fruit, water, grain, &c., are intended for domestic rather than for ornamental purposes. Enormous vessels of this class have been made in all countries from the earliest periods.

The ancient amphora, the jars found near Antium above 6½ feet high, the jar or tub of Diogenes, which was a description of earthen vessel or jar, distinguished from the amphora by its large mouth and comparatively flattened base (its shape was more of a gourd or pot, its size large enough to have rendered it applicable to the purposes of a cistern or water-butt), are all analogous in form to those now manufactured in various parts of the globe.

Large vessels are made in France, principally in Auvergne and in the Pyrenees; in Tuscany, in the neighbourhood of Leghorn, where they are called *coppo*, in Sienna *cziro*, and *orcio* in the Florentine territory (the orcio in the Musée Céramique measures 4 feet 7 inches, by 3 feet 3 inches).

Some of these are of enormous diameter and of extraordinary capacity.

In Spain, similar vessels are termed *tinaja*, and are of the most gigantic size known; some of them requiring twenty men to lift them from the kiln.

A tinaja in the Musée Céramique at Sèvres is upwards of 10 feet high, by 5 feet 2 inches in diameter; and Baron Percy, a surgeon of the Imperial army, states that he has measured some 13 feet 1½ inch high, by 6 feet 6 inches in diameter. They had probably been introduced into Spain by the Moors, as similar vessels are found among the Arabs of Mount Atlas.

The oil jars of the Forty Thieves in the Arabian Nights were probably of this description. They are called *koupchines* by the Caucasian tribes of Armenia, by whom they are used to contain wine.

Gigantic vessels were also made by the Boshmen of the Cape, and by the Indians of Java, who use them for water, and for holding gold-fishes.

Fragments of gigantic vessels are found on the borders of the Ohio. In the class of gigantic pieces may also be placed the vessel that was made to contain the famous turbot (*Rhombus*) of Domitian, and for the baking of which he caused an oven to be constructed: this vessel, according to the estimate of M. Brongniart, cannot have been less than between 6 and 7 feet in diameter.]

1111 Two earthen pots.
Remarkable for their great resistance of heat, notwithstanding the thinness of the clay.

Souza, Joaquim Baptista de, *Lisbon*—Producer.
1112 worked white mat.
1113 A coloured mat.

Ferreira, —, *Lisbon*—Producer.
1114 A small white mat.
1115 A small coloured mat.

Futcher, Raphael, *Lisbon*—Producer.
1116 A set of drawers, made entirely of the woods of the country.
1117 A wardrobe.
1118 A bedstead.
1119 An invalid's chair.

Rangel, A. P., *Lisbon*—Producer.
1120 A wine-cask or vat.
Similar articles are sometimes made to contain thirty pipes or more.

Figueredo, Jose Valentim de, *Lisbon*—Producer.
1121 A saddle.

Fialho, Domingos da Cunha, *Lisbon*—Producer.
1122 Samples of sole leather.

Bretes, Manoel Ferreira, *Lisbon*—Producer.
1122a Samples of sole leather.

Fialho, Domingos da Cunha, *Lisbon*—Producer.
1123 A calf-skin.

Monteiro, Manoel Baptista, jun., *Lisbon*—Producer.
1123a A calf-skin.

Barreto, Francisco Tavanes, *Lisbon*—Producer.
1123b A calf-skin.

Da Silva, Christovao J. Fernandes, *Lisbon*—Producer.
1123c A calf-skin.

Bello, Jose Guifao, *Macao, Santarem*—Producer.
1123d A calf-skin.

1124 Red morocco leather, from Lisbon.
1124a Another sample, larger size.
1124b Dark blue or purple morocco leather, from Lisbon.
1125 A sheep-skin, from Lisbon.

Bretes, Manoel Ferreira, *Torres Novas*—Producer.
1125a A sheep-skin, from Torres Novas.
1125b Yellow sheep-skin, from Lisbon.
1125c White sheep-skin, from Lisbon.

Bello, Jose Gueifac, *Macao, Santarem*—Producer.
1126 Goat-skins.

Fragata, Cosme Augusto, *Santarem*—Producer.

1126a A leather fire-bucket.

1126b Pig-skin for wine, from Santarem.

Royal Marine Arsenal, *Lisbon.*

1126c A peasant's leather wine-bottle.

Reis, Joaquim Jose dos, *Lisbon*—Manufacturer.

1127—1133 Ladies' parasols, with polished wood handles, and covered with coloured striped silk.

1134—1139 Ladies' parasols, covered with white, black, and coloured silk, with steel ribs, and handles variously ornamented with ivory.

1140—1142 Parasols of white, black, and coloured-striped silks, for children.

1143 White silk parasol to fold on the side, with steel ribs, and plated steel handle ornamented with ivory.

1144—1150 Gentlemen's black silk parasols, with steel and whalebone ribs, and ivory and ornamental wood handles.

Lata, Manoel Rodriguez, *Lisbon*—Producer.

1151 Sealing-wax of different colours.

Russel, D. Vicente, *Lisbon*—Producer.

1152, 1153 Stands of artificial flowers (passion-flowers and camelias).

Baron, Felix, *Lisbon*—Producer.

1154 Ladies' kid leather gloves.

Garde, —, *Lisbon*—Producer.

1155 Fringe and tassels for curtains.

1156, 1157 Bell-pulls and bell-ropes.

Royal Tobacco Contractors, *Lisbon*—Manufacturers.

1158—1164 Samples of white and yellow soap, of various qualities.

1165 Box of fine threads, in the form of flowers, from Guimaraes, Minho.

1166 A similar box, in the shape of dolls.

1167 Small skeins of fine sewing thread.

1168 A tree made of fine thread, from Guimaraes.

Moreira, Manoel Custodio, *Porto*—Producer.

1169 Open thread stockings.

1170 Open and closed stockings, from Braga Minho.

1171 Silk for sieves, from Bragança, Tras os Montes.

Royal Tobacco Contractors, *Lisbon*—Manufacturers.

1172—1195 An extensive assortment of various qualities and descriptions of snuff.

1196—1209 Various boxes of cigars, of different qualities and sizes.

1210 Leaf tobacco, cut small.

1211 Box of paper cigars.

The exhibitors have the exclusive manufacture, by Royal charter, of tobacco and soap.

Carvalho, Manoel Lucas de, *Lisbon*—Producer.

1212 Plain wax candles.

1213 Painted wax candles.

1214—1221 Ornamental articles in wax.

1222 A gilt spindle of singular construction, from Braga, Minho.

Bonnet, Carlos, *Lisbon*—Producer.

1223 An ornamental marble basket.

Caetano, Ignacio, *Lisbon*—Producer.

1224 Round table, with marble slab, and gilt.

Royal Naval Arsenal, *Lisbon.*

1225 The arms of Portugal, carved in wood.

1226, 1227 Capitals, for columns, carved in wood.

1228 Ornamental carvings in mahogany.

Caetano, Ignacio—Producer.

1229—1231 Various ornamental carvings.

1232 Carvings in wood, "Jesus Christ and St. Francis."

1233 Oil-skin table-cover, with the sketch da Villa da Praya, Island of Terceira, and representing the attack which took place on the 11th of August, 1829, between the troops of Queen Donna Maria II. and those of Don Miguel.

Vieira, M. I., *Braga, Minho*—Producer.

1234 Figure of Prometheus, in ivory. This figure is represented in the annexed plate.

1235 Carving in ivory: Jesus Christ.

1236 An ivory chain, from Guimaraes, Minho.

Nunes, Joac Paulo, *Lisbon*—Manufacturer.

1237 A writing-desk, made of ebony, inlaid with ivory. The property of His Majesty the King of Portugal.

Monteiro, Jose Pedro—Producer.

Various lithographic sketches, including,

1238 The cathedral of Guimaraens.

1239 Fair on the Great Field, near Lisbon.

1240 The Exchange.

1241 The convent of Serra do Pilar, Oporto.

1242 The Royal Palace of Ajuda (unfinished).

1243 The church of Nossa Senhora da Conceiçao, at Ribeira Velha, Lisbon.

1244 A portion of the town of Cintra.

1245 The entrance of the Church of the Convent of Batalha, near Leiria.

1246 The Convent of Pena at Cintra, now the residence of the King D. Fernando.

1247 The Aqueduct das Aquas livres, near Lisbon.

1248 The Castle of the town of Guimaraes, province of Minho.

1249 The Bridge and Village of Sacavem, near Lisbon.

1250 The Royal Palace of Cintra.

Thomar, Conde de—Proprietor.

1251 Lithographic sketch: the Window in the Hall of the Chapter of the Convent of Christ, at Thomar. Executed by J. P. Monteiro.

Monteiro, Jose Pedro—Producer.

1252 Panorama of the City of Lisbon.

Godinho, Manuel Nunes, *Lisbon*—Producer.

1253 Pen-and-ink drawing of China.

1254 A similar drawing of Her Majesty Donna Maria II.

1255—1264 Samples of thread lace, from Vianna Minho.

Madeira, Francisco Adolpho, *Penipe*—Producer.

1265—1276 Samples of thread lace.

Rozario, Maria do, *Setubal*—Producer.

1277 Samples of thread lace.

Catharina, Maria, *Setubal*—Producer.

1278 Samples of black lace.

Maria, Joanna, *Setubal*—Producer.

1279 Samples of black lace.

Pinto, Francisco Xavier, *Setubal*—Producer.

1280 Samples of thread lace.

The Council of Peneipe—Producers.

1281—1293 Various samples of thread lace.

The Manufacturers of Bicalho, *Porto*—Producer.

1294 Wheel for a rudder.

Russell, V., *Lisbon*—Producer.

1295 An artificial orange tree.

1296 Samples of minerals and dross from the lead mine of Bracal, district of Aveiro.

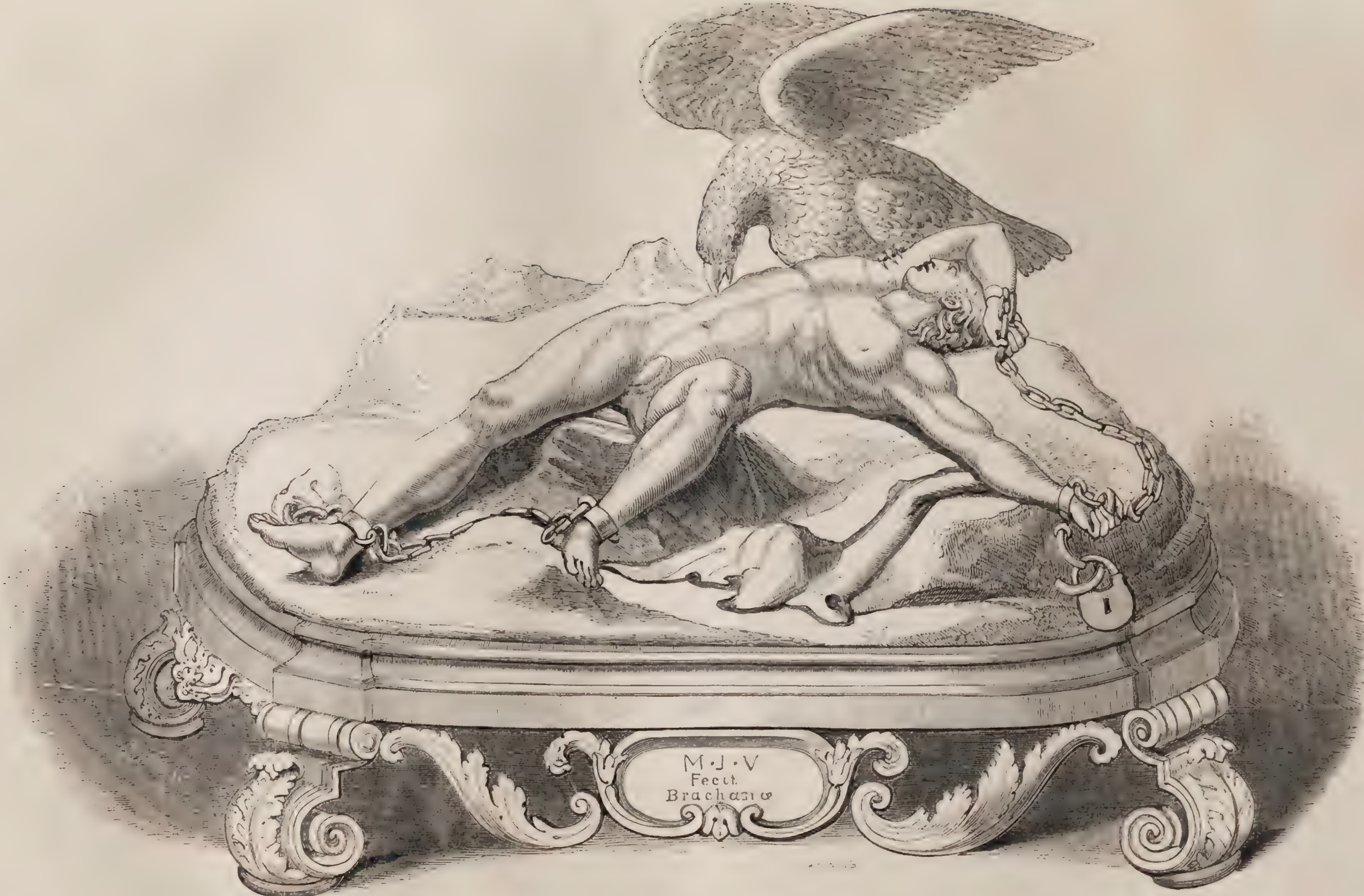
Silva, A. S. P. da—Producer.

1297 Genealogical tree of the Royal Family.

1298 Pen-and-ink drawing: portrait of H. M. Queen Donna Maria II.

Marques, C. I.—Producer.

1299 A case of artificial flowers.



PROMETHEUS CHAINED. CARVED IN IVORY. M. J. VIERA, PORTUGAL.

MADEIRA

The natural and manufactured products exhibited from this island contribute to form an interesting and instructive group of objects. A series of about forty specimens has been arranged under the divisions—Mineral, Animal, and Vegetable Kingdoms, and Manufactures. These specimens, in addition to the beautiful collection of wax models of flowers and fruits, teach, in a valuable manner, the natural capabilities of the island, both in the soil and in its products.—R. E.

Specimens of the Productions and Manufactures of Madeira and Western Islands.

Mineral Kingdom.

1. Common opal—Porto Santo. 2. Lignite—Madeira.
3. Lime-stone—Porto Santo.
4. Stalactitic carbonate of lime—Porto Santo.

[Madeira, and the small adjacent island of Porto Santo, are, for the most part, composed of columnar basalt—the cooled lava of volcanoes, now extinct—but there are also some bands of limestone and some siliceous sands. The decomposed volcanic rock yields in many places an admirable soil in the valleys. The limestones are crystalline or stalactitic, and occur in both islands. The sands are chiefly in Porto Santo, and there yield a good building material, but the whole is of very modern date, and part, at least, of the deposits quite recent. The lignite is also a recent deposit.—D. T. A.]

5. Drip-stone of the island of Terceira (one of the Azores islands).

[This stone is highly prized for its properties in filtering water. This kind of stone is not to be found in the other islands forming the Archipelago, and is only to be obtained at one place in the island, from the quarry denominated the "Ribeira da Testa." It possesses a peculiar sonorous tone, when struck with a piece of iron or hard wood.]

Sent over by Mr. John Read, the British Consul at Terceira.

No. Vegetable Kingdom.

5. Wheat, Portuguese name (*Trigo*).
6. Rye (*Centeio*). 7. Barley (*Cevada*).
7a. Maize (*Milho*). 8. Beans (*Feijão*).
9. Peas (*Ervilhas*). 10. Castor-oil seed (*Mamona*).
11. Dry currants (*Passas de corintho*).
12. Coffee (*Café*). 13. Tea (*Chá*).
14. Bastard saffron (*Açafraó*).
14a. Curcuma longa (*Cacasma*).
15. Sugar and sugar-cane (*Assucar, e canas de assucar*).
16. Arrow-root (*Ararut*).
15a. Bunches of dates (*Ramos de tamaras*).
17. Flax (*Linho*). 18. Cotton (*Algodão*).
19. Thread of aloes (*Fio de pita*).
20. Thread and rope of mallows (*Fio e corda de malvas*).
21. Specimens of all the woods in the island (*Amostras de todas as madeiras da Ilha*)
21a. Catalogus plantarum medicinalium, vel usu præstantium, in Madeira de gentium cultis et notatis, by R. T. Lowe.
21b. Collection of the ferns of Madeira.

Animal Kingdom.

22. Wax. 23. Honey. 24. Butter.
25. Raw silk (*Séda*).
26. Silk-worm cocoons (*Cazulos de seda*).
27. Tallow, and tallow candles (*Sebo, e velas de sêbo*).
27a. Wool (*Laã*). 28. Cochineal (*Cochonilha*).

Manufactures.

29. Linen cloth (*Panno de linho*).
30. Linen napkins (*Guardanapos de linho*).
31. Linen lace (*Renda de linho*).
32. Net shawl (*Chaile de meia de renda*).
33. Shawl and other crochet works (*Chaile e obras de crochet*).
34. Broom wicker-work (*Obras de verga de giesta*).
35. Straw plait (*Tranças de palha*).
36. Artificial feather flowers (*Flôres de pennas*).
37. Works in hair (*Obras de cabello*).
38. Cabinet work (*Obras de marcenaria*):—Two tables (*Mêza*). Three work-boxes (*Caixas*). Two book-trays (*Taboleiros*). One chess-board (*Xadrez*). One book-stand (*Estantes*). Twelve paper-knives (*Facas para papel*).
39. A book, as a specimen of printing (*Amostra de imprensa*).
40. Picture frame, made of Madeira til-wood, carved with grapes and vine leaves.

Ferraz, H., & Sisters—Manufacturers.

Fruit:—Wax copies of flowers, of the greater part of the fruits produced on the island, &c.

[The Portuguese names of the fruits, &c., are given with their English and scientific equivalents, where these are certainly known.]

1—5. Anona—Custard apple (*Anona muricata*).
6. Custard apple (*Anona chirimolia*).
7—11. Pomegranate—Romã (*Punica granatum*).
12—14. Maçâ reinet—Apple (*Pyrus malus*).
15—17. Maçâ de Santa Anna—Apple.
18—20. Pêro dôce—Sweet pear.
23 & 24. Maçâ bemposta—Apple.
25—29. Maçâ barral—Apple (*Pyrus malus*).
30 & 31. Maçâ, cara de dama—Apple (*Pyrus malus*).
32. Maçâ, pino d'ouro—Apple.
33—35. Pera flamenga—Pear (*Pyrus communis*).
36 & 37. Pera Gabaçal . .
38. Pera d'Ingouxo . . .
39. Pera Ruival . . . .
40. Pera Bergamota . . .
41. Pera Francêsa . . . } Pears.
42. Pera de S. Roque . .
43. Pera do Monte . . .
44. Pera de S. João . . .
45. Pera Caniça . . . .
46. Pecego da Ponta do Sol—Peach (*Amygdalus persica*).
47 & 48. Pecego da Calheta—Peach.
49. Figo Banana—Banana (*Musa paradisiaca*).
50—52. Goiaba—Goiaba (*Psidium pomiferum*).
53. Pera flamenga—Pear (*Pyrus communis*).
54 & 55. Ameixa—Plum (*Prunus domestica*).
56 & 57. Pecego calvo—Nectarine (*Amygdalus persica*).
58. Laranja—Orange (*Citrus aurantium*).
59. Laranja d'imbigo—Orange (*Citrus aurantium*).
60. Laranja tangerina — Mandarin orange (*Citrus nobilis*).
61—63. Murucujá — Orange (*Passiflora quadrangularis*).
64. Manga—Mango (*Mangifera indica*).
65—69. Tabaibo—Prickly pear (*Opuntia*).
70. Castanha—Chestnut (*Castanea vesca*).
71. Pimentâo—Capsicum (*Capsicum*).
72. Jambo—Rose apple (*Eugenia jambos*).
73. Bebera—Black fig (*Ficus longa*).
74. Figo—Figs (*Ficus carica*).
75. Maçâ vermelha—Apple (*Pyrus malus*).
76. Nóz—Walnut (*Juglans regia*).
77. Limâo—Lemon.
78. Limâo cidra—Citron (*Limonia*).
79. Cidra—Cyder (*Citria*).

SPAIN

North Areas, G. H. 44, 45; I. 44; J. 44, 35; North East Central Gallery, I. 44.

This collection is chiefly remarkable for the abundance of the raw materials and produce it contains. The samples exhibited will, however, at the best, only convey a very imperfect idea of the vast mineral resources of this productive country.

Spain possesses, in many portions of her territory, enormous fields of pit-coal. The most productive and the most celebrated of these occur in the province of the Asturias, and among the interior faces of the mountains themselves. The price of Asturias pit-coal at the port of Gigon (the only point at which it can be shipped) is about 3 reals per quintal of 800 Castilian lbs. each. But at the pit mouth the price is fully one-third less; its cost on the coast being much enhanced by the difficulties of inland carriage. The coke that is manufactured from it, in the open air, fetches three, four, and sometimes as much even as six reals per quintal. The pit-coal raised in the Siera and the Lagrao mines is chiefly exported. The coal dug in Mieres and at Leria is consumed in that country by the furnaces for smelting their iron, steel, &c.

Several companies of Spaniards,—of foreigners,—and of Spaniards and foreigners associated,—have been formed, who devote themselves with great ability, some to the improvement of the methods of mining, others to the construction of common high roads as well as of tramways, for facilitating the carrying of this coal. The Mining Associations of the Valley of Santullan, in the province of Palençia, situate about two leagues from the grand route of Santander, and five leagues from the canal of Castile, are anxiously looking for the execution of those projected lines of railroad that are to connect Alen with Santander, and Madrid with Valladolid, as offering a cheap and enormous outlet for their very abundant supplies. The supplies of coal raised by the *Polentina Leonesa* Company, in a very extensive district, that is peculiarly rich in iron ore—of the province of Leon—will find a most profitable vent by the lines of railway communication now intended to be laid down. These beds of coal are very numerous, and of an average thickness of from two to three *metres*.‡ The Spanish collection contains a sample of pit-coal from Guadita, in the province of Grenada; another of brown jet; and a third of polished jet from Oviedo. Out of this material small articles are manufactured, which are sold at moderate prices in the Asturias. The collection contains moreover some lignite from Guipuzcoa, which is now being dug near the village of Iquelzoputzuco-Ondos, and it is much used in the mines of that country.

The fields of pit-coal must extend themselves over a much wider area in the direction of the Mediterranean; for at the last Exposition at Madrid there was exhibited a sample of pit-coal from the Adeline Mine, in the province of Valencia, where this coal is worked by a private company. The price—6 reals, or 1 franc and 60 cents. (about 1*s.* 4½*d* English) the quintal.

Spain also possesses almost every species of the metals which are the object of industrial labour, as may be ascertained, although but imperfectly, from an examination of the species contained in the Spanish collection. Among many others, gold, incrusted in quartz, has just been discovered in the province of Gerona. There is a specimen of it in the collection.

The various substances coming within the class of Stones and Earths, of which Spain has transmitted specimens to the Great Exhibition,—are but a very inadequate exponent of the riches, of an analogous description, that she really possesses. In this respect the soil of Spain is, undoubtedly, as rich as it is in metallic products; for it offers all that can be desired for giving to various classes of industrial occupation, that make use of them in their processes, the means of an incalculable development and perfection. One cannot take a single step in this boldly-featured region without coming upon enormous masses of marble, serpentine, alabasters, puzzolanos, kaolins, hydraulic chalks, refractory freestone, plastic clays, and very many other primary matters, too numerous for recapitulation here.

There is a tolerably rich collection of marbles, alabasters, clays, and serpentines, from different regions of Spain. In addition to this, a still more comprehensive collection has been transmitted from Madrid, and which includes 87 specimens of the peculiar series of Cordova, of Grenada, of Almeria, of Leon, of the Asturias, Saragossa, Huelvas, and Guipuscoa.

The Spanish collection contains some specimens of corn from the south, from the centre, and from the north of the Peninsula. On account of their number we cannot notice each variety in this place; but we would strongly recommend the study of these cereals to chemists and agriculturists, who would investigate the contents of the Exhibition. It is probable they will arrive at some interesting results illustrative of the richness of the amygdalaceous principle concentrated in the grains of different Spanish provinces. There are wheats from Seville, the price of which varies from 2 to 45 reals the fanegua. (This measure is extremely variable in Spain; and those who are engaged in the trade of corn would do well to make the customary measures of capacity in use in the several provinces of that country,—and even in one and the same province,—their especial study.) From Malaga there is a variety called *chamorra*, 38 reals the fanegua; and another, distinguished by the epithet "*country*," at 48 reals. M. Picrole, a cultivator, has sent some Indian corn raised by himself, and of which the ear seems to have contained 88 grains.

Spain produces all the vegetable textile matters of temperate climes, a certain number of those produced in hotter countries; and she may, perhaps, be capable of producing many others the use of which has not yet been extensively adopted by her industrial labour. She possesses flax, hemps, cotton, "esparto," pine fibre; and she might command, in addition, the hemp of Senegal, the flax of New Zealand, the bananas, the pines, some of the palms of the tropics, as well as various kinds of *malvacols* (M. mallows), urticas, &c. which furnish textile fibres. Specimens of various kinds are exhibited. Medicinal plants and drugs have also been sent.

The contrast presented by the Spanish Exposition, between the number, the variety, and the richness respectively of the primary and raw materials of Spain, and her manufactures, exhibits a great void which can be filled up only by her assiduous and sagely calculated labour in that new epoch which is now opening to us. Generously endowed, by Nature, herself,—surrounded by working nations who invite her on all hands to take from them their products, she ought to be prepared to solve the problem whether it will more conduce to her advantage to improve and extend her manufacturing industry, or to restrict her efforts to the perfecting the production of such primary materials, the exchange of which has constituted, up to the present moment, almost the sole basis of her commerce.

The manufactured articles which have been transmitted from Spain to the Great Exhibition convey but an exceedingly incomplete and fallacious notion of the character, the condition, and extent of her industry. There are entire branches—such as glass making, the manufacture of earthenware, porcelain,—the ceramic arts, in short,—together with cutlery, lock making, almost all the industrial processes used in the working of metals; the spinning and winding of cotton; the yarning and twisting of flax, and many others—that are not at all represented in the Spanish collection, or which do appear there by a few isolated specimens only, utterly insufficient to ground any judgment upon. There is not a single specimen of her manufactures of woollen tissues, such as Tissas de Laines,—manufactures that are at once indigenous, characteristic, and important. As for woollen cloths, which abound everywhere, and which would well merit the most careful examination on being compared with the fabrics of any other countries, there are but three of the provinces of the Spanish monarchy that have even sent complete series of samples calculated to enable foreigners to appreciate the present condition of her manufactures in this branch. The silk stuffs are so few in number, that were we to form an opinion upon such specimens, we should be led to imagine that these products must be the results merely of some individual and isolated efforts; whereas there exist hundreds of silk mills and works, perfectly organized, in a great many districts of Spain.

To give the reader a comparative notion of the negligence or apathy that must prevail among the industrial classes of Spain, suffice it to say that Catalonia, whose connexion with what we shall call the cotton industry of the country represents a capital in buildings and machinery of 83,000,000 of francs (3,172,612*l.*), with a circulating capital of 7,000,000 of francs (291,667*l.*); and an aggregate amount of 29,000,000 francs (1,208,332*l.*), payable annually on account of salaries and wages; with 93 steam-engines of a total of 4000-horse power, of every description; with 60,000 operatives; 800,000 spindles and brooches (shuttles); 40,000 looms, consuming 23,000,000 of kilogrammes of coal, using up 15,000,000 of kilogrammes of raw cotton, and producing from 16,000,000 of kilogrammes of spun yarn (filature); 110,000,000 of metres (or 119,166,666 yards) of woven stuffs; 16.000,000 of prints ("d'impressions");—this Catalonia has not sent a single sample of these numerous products to the Exhibition in London.

At the entrance of the Spanish Gallery there will be seen, detached from the general series of its Exposition, some costly articles of elaborate and remarkable workmanship. These are, arms from the celebrated Royal Manufactory at Toledo, and others, with incrustations in gold and in silver, by M. Zubiago; embroideries on velvet; on Batiste; on the *difis* (or pine-apple fibre cloth) of Manilla; and a robe and a shawl of black lace worked with coloured flowers—a difficult innovation introduced into the art of lace-working by M. Fiter, a skilful manufacturer, of Barcelona.

The manufactures of hemp and flax are but imperfectly represented. There is a good series of specimens from the new factory established at Ferrol, under the name of Isabel II. That factory is established on the economic basis of an hydraulic motive power equal to a 60-horse power.

Other contributions have also been forwarded to this department of the collection from factories at Cervera del Rio Alhama, Valencia, and Grenada.

An excellent collection of samples of cordage, cables, sail-cloths, &c., has been sent from the Arsenal at Carthagena, accompanied by some interesting notes on the relative weights, resistance, elasticity, &c. of the different materials exhibited.

The very fine cloths from the Philippine Islands, although not manufactured from flax, must find a place in this section for want of a more special appropriation. In the note accompanying these specimens as well as various vegetable fibres, it was stated that the latter, of which these cloths are made, are extracted from the *Pita*, which would seem to be a species of *Bromelia*, and from the *Jussi* and the *Bejuco*. From the fibres of this Bejuco, hats and other articles are made in the Philippines, of a fineness as peculiar as their strength.

There are but few varieties of the cloths of Spain in this collection; but on examining them in detail we must do justice to their quality and the moderate scale of their prices. Those cloths, made from Saxony wool, leave little to be desired as to face or appearance, and absolutely nothing as to quality, in respect of strength of texture and fastness of colour.

Segovia has sent some samples of its common cloths; and the manufactory of Renedo, at Santander, a few specimens of the beautiful series it furnished to the Exposition at Madrid.

A few beautiful silk fabrics from the celebrated silk-works at Talavera do not suffice to convey an adequate idea of its products. A more complete series has been forwarded from Valencia, consisting of silk stuffs for curtains and furniture, at 36 reals the vara; "gros" for robes, at the same price; velvets, at 60; other kinds, for cushions, waistcoats, &c. Of ribbons the contributions are very scanty. (Silk) blondes are well represented by the lace of this kind exhibited by M. Margaret and M. Fites, of Barcelona. The first of these lace manufacturers employs 1550 workmen. Robes, mantles, veils, scarfs:—the delicate tissues of this description in the collection leave nothing to be desired. The reputation of these fabrics is established; they are in general demand, both in France and England.

The contributions of Spain in carving, and other works in wood, are but few, yet they are of indisputable interest. The escrutoire, of inlaid woods, the tables of a like description, from eminent cabinet-makers of Madrid, and the table in mosaic from Barcelona, and into the composition of which enter 3,000,000 of separate minute pieces, supply a faithful evidence of the ability and skill of her artists in this kind; but they should have sent, also, the samples of beautiful furniture they produce with all that elegance of form which the taste of the present day demands.

The contents of the Spanish Exposition do not correspond with the condition of the various branches of Spanish industry. In this respect the collection must be considered as deficient in specimens of papers of all kinds, although it possesses a few fine samples. But it will be seen how much more extensive and complete that series should have been, when it is considered that Catalonia alone employs 16,000 persons in the paper manufacture, and produces 700,000 reams annually. Fans and soaps are better represented. The stearic products come from Madrid. One of these last specimens is a white soap, "cold-made," invented by M. Leon et Rica, of Madrid. He affirms that he can prepare, in four-and-twenty hours, a sufficient quantity of this new manufacture to meet any extent of demand that could be made for it. The establishment of M. Canales, at Malaga, contributes specimens of his essence of citron and citric acid.

Among the various productions transmitted from the Spanish colonies must be noted some Havannah cigars of very superior quality. The excellent tobaccos which the island of Cuba contributes to commerce are grown on a belt of territory of no very great extent, adjacent to the western coast of Cuba, and named "Vaelta de Abajo." The soils adapted to the culture of this product, and which are generally the margins of rivers, are so numerous in that part of the island we have just alluded to, and in many other of its localities, that they could furnish excellent tobacco for the supply of the whole world. But some economic obstacles have been opposed, hitherto, to the development of this culture.

The Patriotic Society of Manilla likewise has sent to the collection tobacco leaves of the varieties that are reared in the Bisayan Islands,—the cigars manufactured from which are beginning to be introduced into Spanish consumption.—R. de S.

1 CERAIN (D. JUAN BAUTISTA), *Maestu, Alava*—Manufacturer.

Ore from the Somo-rostro mine.

Calcined ore.

Slag and iron, in different states.

2 The INSPECTOR of MINES of the DISTRICTS of TARRAGONA and GERONA.

1 Samples of galena, from the Government mines of Falset, province of Tarragona.

2 Auriferous quartz, from the Carolina mine, Culera, province of Gerona.

3 D. A. O., *Guadalajara.*

Silver ore from mines discovered six years ago at Hiendelaencina, Guadalajara.

4 The INSPECTOR of MINES of the DISTRICT of GUIPUZCOA.

1 Iron of first smelting, worked at Orulantequieta, and is found in beds of from 1 to 5 yards in thickness. It is used mixed with three parts of Somorrostro smelting.

2 Iron of first smelting worked at Aldaes Iturry, and found in beds of from 1 to 4 yards in thickness.

3 Galena, from Lordiz, where it is found more or less mixed with sulphuret of zinc in a layer of 2 feet thickness.

4 Blende and Galena, from Vizcoch. These two species of ore are found in great abundance, in a vein of iron-spar, about 1½ yards in width.

5 Lignite, from Iquelzo-putzuco-on-doa. The thickness of the bed is from 2½ to 4 feet.

6 Blende, worked at Miatzegorrieta; it is met with in great abundance near the surface, in a layer of spar-iron, of 3 yards wide.

7 Galena, worked at Mocorrotz, and found in a vertical vein, of variable thickness; fluor-spar accompanies this ore.

8 Galena, from the two mines situated in Olaquiñeta. Found more or less associated with blende; iron and copper pyrites are also met with, but in small quantity.

9 Ore of Artzorrotz; consisting of galena, with more or less blende, and iron and copper pyrites.

10 Galena, from Lastaolaburo, containing blende in divers proportions, and also copper and iron pyrites, accompanied with fluor-spar and quartz.

11 Calamine, from Astovide.

5 The DIRECTOR of the MINES of LINARES.

1 Sulphuret of lead, from the Arrayanes mine, known by the commercial name of alquifou.

2 Lead after the first smelting, from the above ore, and employed for founding, not being so pure as the alquifou or potter's ore.

6 The INSPECTOR of MINES of the DISTRICT of LA MANCHA.

1 Micaceous clay slate, from the lower Silurian formation. 2 & 3 *Calymene tristani*, from this formation. 4 Sandstone (*Acenisca*) with *Spirifer trigonalis* and other bivalves from the Devonian formation.

5 Compact Eufotite, in contact with the vein of the Concepcion mine.

6 Virgin quicksilver from the Valdeazogues mine; 7, from the Concepcion mine; and 8, from the inter-vein.

9 Iron pyrites combined with the virgin quicksilver of the Concepcion mine.

10 Crystallized cinnabar and virgin quicksilver, from the same mine.

[The soil of Spain contains mercury in many districts of its territory, and various specimens of this mineral have been forwarded to the Exhibition. These have been drawn from the celebrated mines of Almaden, of the Asturias, and of Almeria, on the Andalusian side. The Almaden series would have been very instructive had the specimens been sufficiently large. They exhibit mercury, under the several conditions in which it is found, as well as the earthy substances and fossils that occur in the same formations which contain it; the latter being generally rock—the upper, of Silurian series. We meet with the *Calimena tristani*, and the *Spirifer trigonalis*, and other bivalve shells of the *Tertiary Devonian* formation. Mercury is found in its native state, and in combination with sulphur. There are some samples of crystallized cinnabar; of brown freestone, impregnated with cinnabar of corneated mercury (*M. corné*), to the number of twenty-six specimens, exceedingly interesting as enlarging our geological knowledge of the region of mercury in Spain. Within these few years, several mines of cinnabar have been opened and worked in the Asturias. The mineral beds of Tijola and of Bayargue, in the province of Almeria, have not, as yet, been properly examined.]

11 Crystallized barytes, with virgin quicksilver, from the same mine.

12 Calcareous-spar, from the same mine.

13 Slaty cinnabar, from the Valdeazoquel mine.

14 Sandstone, impregnated with cinnabar, from the same mine.

15 Ore of quicksilver (called *Corneo*); and 16, similar ore (called *Piedra frailesca*) from the Entrichedo mine.

17 Quartzite, with portions of cinnabar, from the Almaden mines; 18, Quartzite from the upper Silurian rock, which forms the vein of the mine.

19 Arenisca oscura, dark sandstone (called *Solera*), varied with cinnabar and globules of quicksilver, from the San Francisco mine; 20, a specimen more penetrated, with the crystallization of the cinnabar a little distinct, from the San Diego; 21, a specimen of still richer quality, from the San Pedro; and 22, another with the crystals very distinct.

23 Cinnabar, or upper ore, from the San Nicolas.

24 Plate of cinnabar, worked and polished, from the same.

25 Slate, with sliding surface, from the pendent of the San Pedro.

26 Breccia, or *Piedra frailesca*, with crystals of lime-spar, with joints of cinnabar.

27 Native quicksilver, from the San Pedro.

28 Artificial sublimate. 29, Vermilion.

30 Scoriæ, from the upper ore; and 31, from the *Solera*, or *China*.

32 Goniatites and some other fossils, from the Devonian formation.

The proportion of quicksilver produced from the ores of the Almaden mines amounts to 75 per cent.; supposing the furnaces to be charged in the usual proportions with superior Solera Pobre, China, and Bolas de Vacisco.

[The celebrated and long-known mines of Almaden, which furnish annually upwards of 1,000 tons of mercury, are worked in veins of very considerable thickness, occurring in the palæozoic rocks of La Mancha. Notwithstanding the active operations carried on in these mines for many centuries, the depth is still not exceeding 150 fathoms; but the principal vein has a thickness of from 30 to 50 feet, and the magnitude is still more considerable where the veins intersect. The mines yield native mercury and the sulphuret: the latter (cinnabar) containing, when pure, 85 per cent. of metal. The veins extend for a considerable distance, running east and west from Almaden.—D. T. A.]

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7 The INSPECTOR of MINES of the DISTRICT of MURCIA.

1 Argentiferous galena, in contact with sulphuret of zinc, from the mine of San José in Mazarron, containing 14 per cent. of lead, and 2 oz. of silver per 100 lbs.

2 Sulphuret of zinc, in contact with iron pyrites, from the same mine.

3 Argentiferous galena, in contact with sulphuret of zinc, from the Josefita mine; it contains 12 per cent. of lead and 2 oz. of silver per 100 lbs.

4 Argentiferous galena, in contact with sulphuret of zinc and iron pyrites; from the same mine, with blende and clay predominating.

5 Argentiferous galena, in contact with iron pyrites. In this specimen the galena appears in a confused crystalline form, having abandoned the blende with which it is usually united, and associated with iron pyrites; it contains 29 per cent. of lead and 2·56 oz. of silver per 100 lbs.

6 Iron pyrites, in contact with argentiferous galena, from the Bilboa mines. In this specimen the pyrites appear in a foliaceous form, alternating with very thin layers of argentiferous galena.

7 Iron pyrites, in contact with argentiferous galena. In this specimen the galena predominates in broader plates.

8 Iron pyrites, in contact with argentiferous galena. In this specimen the pyrites appear traversing the clay-schist, which is the rock in which the metallic layer is enclosed; the galena is sprinkled with some particles of copper pyrites.

9 Argentiferous galena, in contact with iron and copper pyrites. In this specimen the galena forms the principal mass; it effects an irregular crystallization, appears pierced in various ways by pyrites, and preserves the clayey matter in which it is found embedded.

10 Argentiferous galena. In this specimen the galena is nearly divested of impurities, having a tendency to form bands.

11 Argentiferous galena, from the Porvenir mine. In this specimen the same tendency is seen; and a group of crystals of large size, sprinkled with iron pyrites, is found in some parts of the mass.

12 Argentiferous galena, from the same mine. The plates which form the mass of this specimen are closely united. Some particles of pyrites of iron and copper are found in it.

13 Argentiferous galena, crystallized, from the Alianza mine. The galena here appears of a cubical form, accompanied by blende and iron pyrites.

14 Argentiferous galena, from the same mine. Similar to the preceding, but not so pure.

15 Argentiferous galena, granular, from the Española mine. It appears in contact with the carbonated ores, forming isolated nodules.

16 Argentiferous galena, in contact with the carbonate of lead, from the same mine. The mutual contact of both substances in this specimen is clearly seen.

17 Argentiferous galena, from the same mine. The same as the former, but with the carbonate of lead predominating in a greater degree.

18 Platy galena, disseminated in a clayey mass, from the Santana mine; quartz constitutes a part of the matrix.

19 Carbonate of lead in contact with iron, from the Española mine. This species, which is comparatively rare, is worked together with other poorer ores in blast furnaces.

20 A variety of carbonate of lead.

21 Nodules of carbonate of lead and crystals of quartz, united by a mass of iron-clay, from the Enrique mine. This ore is rare, and is found in isolated lumps in the layers of iron-clay which accompany the carbonated ores.

22 Nodules of carbonate of lead connected by a mass of

iron-clay, from the same mine. It is one of the species which is found in the Sierra of Carthagena; the matrix is clayey, and serves as a cement to the grains of carbonate of lead.

23 Carbonate of lead in a mass of quartz, from the Afortunado mine. In this specimen the latter is so intimately united with the carbonate, that it appears to be an homogeneous mass.

24 Crystals of carbonate of lead, united by a clay-iron cement, from the Rafaela mine.

25 Crystals of carbonate of lead, from the Relampago mine, so intimately united as to form an homogeneous mass.

26 Crystals of carbonate of lead, from the same mine. The carbonate in this specimen forms bands of different colours.

27 Crystals of carbonate of lead, from the same mine. A confused crystallization in capillary needles.

28 Crystals of carbonate of lead, from the Sol mine. In this specimen the confused grouping occurs in lengthened, isolated, and irregularly united crystals.

29 Crystals of carbonate of lead, from the Relampago mine, in flat and long prisms, covered with arsenio-phosphate of lead.

30 Crystals of carbonate of lead, from the same mine, but with the crystals more clearly seen.

31 Arsenio-phosphate of lead, from the same mine, in hexagonal prisms, with crystals of carbonate.

32 Arsenio-sulphuret and arsenio-phosphate of lead, from the same mine.

33 Specimen of the same, with the band of arsenio-sulphuret more distinct.

34 Crystallized arsenio-phosphate, from the same mine, composed of quartz and crystals of arsenio-phosphate and carbonate of lead.

35 Carbonate of lead, imbedded in a mass of iron-clay, from the Eloisa mine. This is the most usual form in which it appears in the district, and though the produce is only 8 per cent., the ease with which it is smelted, and its abundance, render it valuable.

36 Carbonate of lead, with quartzose matrix, from the Enrique mine.

37 Carbonate of lead, mixed with brown iron, from the same mine.

38 Carbonate of lead, from the Eloisa mine, with mixture of sulphate and small grains of quartz in the brown iron.

39 Carbonate of lead. Another specimen of the same.

40 Carbonate of lead, in crystals, united by an iron-clay cement, from the Rafaela mine.

41 Carbonate of lead, in crystals, from the Serrano mine. In this the crystals are only slightly adherent.

42 Carbonate of lead, mixed with the ferro-hydrate, from the same mine.

43 Carbonate of lead, in powder, in a mass of iron-clay, from the Sobresaliente mine; valued for its ready fusion.

44 Carbonate of lead,f rom the San Antonio, similar to the preceding, but having greater compactness of the matrix.

45 Carbonate of lead, earthy, with mixture of iron, from the Rafaela mine.

46 Carbonate of lead, crystallized, mixed with ferro-hydrate, from the Inglesa mine.

47 Carbonate of lead, in crystals of quartz, from the Enrique mine. The carbonate in this specimen is in a mass, and the crystals of quartz are in groups.

48 Carbonate of lead, with quartz, from the same mine, having more lead than the preceding.

49 Carbonate of lead, crossed by a band of sulphate, from the Rafaela mine. The black band which forms the nucleus of the mass is the sulphate, derived from the decomposition of the galena.

50 Sulphate of lead, in a mass, with ferro-hydrate, from the Mosqueteros mine.

51 Sulphate of lead, from the Dolores mine. Like the preceding, but more compact, and accompanied with quartz.

52 Sulphate of lead, massive, from the Relampago mine.

53 Carbonate and sulphate of lead, with ferro-hydrate, from the Rafaela mine.

54 Sulphate of lead, massive, with ferro-hydrate, from the Relampago mine.

55 Sulphate of lead, massive, from the same mine, of finer grain than the preceding.

56 Mass composed of crystalline grains of sulphate of lead, in contact or covered with ferro-hydrate.

57 Sulphate of lead, crossing a mass of carbonate. A variety of the preceding.

58—60 Aluminous schist, from the Perules quarry.

61 Ancient lead slag.

[Spain, under the Romans, possessed most extensive mines, and mining and metallurgical processes were considerably advanced. Pliny describes many of these; and from the statements made by that author, and others, it is probable that the mines of Spain yielded nearly all the silver, lead, and copper to the Roman empire. The enormous heaps of slag, known as Roman scoria, the refuse of their works, still contain a sufficient quantity of silver to pay for working them. In England, similar accumulations—in The Mendips (originally called The Myne deeps), and in Derbyshire—are now smelted, for the silver they contain.—R. H.]

62 Ancient lead slag, belonging to a more remote period than the preceding.

63 Roman litharge; commonly found in lumps by the side of the ancient slag. This specimen contains 51 per cent. of lead, without the slightest trace of silver, a circumstance which appears to prove that the art of extracting minerals was known amongst the ancients.

64 Garvillo de rambla. Small rounded pieces of carbonate or phosphate of lead, washed down by the mountain torrents.

65 Gandinga de rambla; smaller particles of the same. The specimen exhibited has been produced by washing.

66 Ancient slag, similar to No. 61 (called, from its flattened form, *Tejillo*).

67 Ancient slag, similar to the preceding (called *menuda*, from its smaller size).

68 Gandinga de escoria; produced from washings or residuum of the slag (called *No tiene mas*).

69 Gandinga de escoria. The minute particles which escaped the former processes, on being submitted to a washing, produced this specimen.

70 Gandinga de escoria. Similar to No. 68, but larger.

71 Almagre, or almazarron, red lead. Residue from the preparation of alum.

72 Crystallized alum, from the aluminous schists Nos. 58, 59, and 60.

73 Crystallized alum. Like the preceding, but of a better quality.

74 Crystals of lead, obtained by Pattinson's method.

[The introduction of Pattinson's process of desilverising lead, into Spain, has been very important to the mineral interests of that country, as now they are enabled to work lead ores containing a small per centage of silver, which did not pay for extracting by any other method. The process consists in keeping the metal just in a fluid state; the lead crystallizes out as pure lead, leaving a portion behind excessively rich in silver, from which the lead is removed by the oxidizing process, in a reverberatory furnace.—R. H.]

75 Lead, from the smelting of the Gandingas de escoria; specimen No. 68.

76 Lead, produced from the union of carbonates of lead with slag, Nos, 66, 67, and 69.

77 Lead, from the melting pots of Pattinson.

78 Lead, from the ancient slag, similar to Nos. 62 and 70.

79 Lead, from the mixture of argentiferous ores of the Sierra Almagrera with those of the district.

80 Lead, from litharge, made by the English process.

81 Lead, hard, before crystallization. It is reduced in reverberatory furnaces.

82 Lead, soft. The latest produce of the crystallization.

83 Lead, prepared to the English process.

84 Stalactitic iron, with crystals of carbonate of lead.

8 The DIRECTOR of MINES of RIO TINTO, *Huelva*.

1 Grey copper, from the Preciosa mine, which contains 22 per cent. of copper, and 0·125 per cent. of silver.

2 Raw mineral ore, proceeding from the vein of double sulphuret of iron and copper. This ore, which produces an average of five per cent. of copper, appears in a mass of irregular form and of large dimensions.

3 Ore prepared by slow roasting, exposed to the open air in piles, and worked by the damping process.

[This process consists in stratifying the sulphur ores with carbonaceous matter, and setting fire to the pile; the whole undergoes a slow combustion. Both the sulphur and the copper absorb oxygen from the atmosphere in the process, and sulphate of copper is formed; this is washed out by water in the damping process, and iron is then employed to precipitate the copper. This precipitation of copper by iron is an example of substitution: a particle of iron is converted into sulphate of iron, and dissolved, for every grain of copper deposited.—R. H.]

4 Bar of forged iron, covered with a case of copper precipitated from the waters of the Rio Tinto; which, traversing excavations made at different epochs, some very remote, carry sulphate of copper in solution.

5 Bar of cast iron, covered with a casing of copper precipitated, by the action of the iron, from the waters charged with sulphates of iron and copper.

6 Bar *(Toral)* of fine copper, produced from the refining of the casing of the class No. 4, performed in a reverberatory furnace.

7 Cake *(Roseta)* of fine copper, resulting from the refining in crucibles of the scales, or copelas, of No. 5.

9 The INSPECTOR of MINES of SANTANDER.

Copper pyrites, from the Constancia mine, town of Camaleno, district of Petes: the ore produces 20 per cent. of copper.

[Under this head may, first, be noticed the ores from the mineral beds of Huelva, the mines of which have been almost always worked by the government. The average richness of the grey copper, which is a mixture of the two pyrites of iron and copper, is above 5 per cent. of this latter metal. There are also the ores of the "Preciosa" mine, which are of a sulphuro-arseniated antimoniure, compounded with iron, silver, copper, &c. This deposit is found to consist of an irregular sort of vein, of about 40 centimetres (or 13 inches) in breadth. It contains 20 per cent. of copper and $\frac{1}{125}$ of silver. Its price, at the surface of the mine, is about 15 francs the quintal. The mine of copper pyrites in the province of Seville, near the village of Castello de las Guardas, is very considerable. It is, in fact, a vein of metal of from 12 to 13 metres (39 to 42 feet) in thickness, with a breadth of 336 metres (1092 feet), and a depth of 35 metres (114 feet). The mineral is mixed with quartz, in the proportion of 3½ per cent. of the former, 5½ per cent. of the latter, and the residue is iron. They obtain, at these works, from 200 to 225 quintals of pure iron per month.

Sulphur of copper is procured also at Grenada, in the Sierra Nevada, in the Asturias, at Santander, &c.

The blue and green carbonates of copper abound, exceedingly, at Velez Rubio, at Bayargue, and at Torre, in the province of Almeria. Mining is very irregularly conducted in this country. Some speculations of this nature, however, are in progress of organization, and others already begin to yield returns.

The mines of argentiferous coppers of Saragossa, that are now wrought, yield from 11 to 15 per cent. of copper, and 8 ounces of silver, for every quintal of ore. There are mines of this sort at Calcena and at Biel; but this last does not contain silver, any more than the mineral ore of Foxburne, which yields 18 per cent. of iron, however, and sells for 1 franc 35 centimes the quintal.

Carbonated copper is found, moreover, in the Asturias, in the mine called the "Miracle," in the commune of Ovis. All this ore is exported to foreign countries, at the rate of about 5 francs the quintal. The sulphuretted leads of Santander, from the mine of Constancia, near the village of Cameleño, are found in veins of about a foot in thickness; and they give about 12 per cent. in metal. These workings have been commenced with some chances of success, for the country abounds both in building-timber and in woods adapted for conversion into charcoal.

The coppers procured from all these ores, particularly those of Rio Tinto, of Seville, and of Almaden (specimens of which are deposited in the Exhibition), are of excellent quality. Various bars of iron (which are also in this collection), covered with an incrustation of copper, will illustrate the usual method employed—whether for waters that are naturally saturated with sulphate of copper, or for the transmutation of copper and iron ores (minerals) into double sulphates. The metal precipitates itself, and the incrustation of copper is smelted and refined in reverberating furnaces. Other ores or minerals that differ in their properties from sulphurs are treated by fusion—preceded, where such process becomes necessary, by roasting. The pure coppers from Rio Tinto that are deposited in the Exhibition, realize a price of about 95 reals the arroba of 12½ kilogrammes; that of Seville, about 90 reals. It is from this last-named kind that they make "lateen" or brass capsules, and metal plates, in the factory of San Juan de Alcarres (which has not sent any sample of its products, on this occasion, to London). A certain quantity of them is forwarded to Catalonia. The copper of Rio Tinto is chiefly employed in perfecting the copper coinage of Spain (already too extensive), and in meeting the demands of the Spanish marine.]

10 The MARTE MINING COMPANY, *Losacio*, *Zamora*,

Ore and regulus of antimony.

Specimens of silver, lead, and other minerals.

11 The INSPECTOR of MINES of SARAGOSSA.

1 Argentiferous galena, from the San Vicente mine district of Fombuena: lead, 28 per cent.; silver, 2 oz.—per quintal of 100 lbs. Spanish.

2 Ore of copper, from the Imperial mine, in the same district.

3 Argentiferous galena, from the Desgraciada mine, district of Ateca: lead, 22 per cent.; silver, 3 oz.—per 100 lbs. of mineral.

4 Antimony, from the Paraiso mine, in the same district.

5 Antimonial galena, from the mine of Na. Senora de los Dolores, in the same district: lead, 18 per cent., per 100 lbs. Spanish; antimony, 12 per cent.; silver, 1½ oz.—per 100 lbs. Spanish.

6 Sulphuret of lead and antimony, from the Ascension mine, district of Nombrega: lead, 22 per cent.; antimony, 8 per cent.; silver, 2 oz.—per 100 lbs. Spanish.

7 Copper, from the Maria mine, district of Biel.

8 Argentiferous copper, from the Mensula mine, district

of Calcera: copper, 11 per cent.; silver, 8 oz.—per (quintal) 100 lbs. Spanish of mineral.

[The mineral ores of lead and zinc of the Sierra de Gador, near Guadix, have been worked solely for the sake of the lead which they contain, in the proportion of 15 per cent.; but it is now proposed to extract the *zinc* also, which is more abundant than the lead, particularly in the mine of Leon de Plata.

The whole coast of Andalusia is rich in galenas; the province of Malaga yields this product mixed with pyritic iron and hydroxidated iron, at Mijar. This mineral, which is fused in large Spanish reverberating furnaces, sells for about a franc per quintal. In the Sierra de Narja, in the same province, galena is found in beds, and in masses, occurring in crystallized chalks. By fusion, it yields 40 per cent. of lead, of excellent quality. The territory of Morbella, which furnishes superior ores of magnetic iron, contains also a rich deposit of argentiferous galena, of nearly 50 metres (more than 160 feet) of ascertained thickness, in a transition formation. It gives 46 per cent. of lead and 2 ounces of silver per quintal. This ore is sold at 5 francs the quintal.

Linares contains a considerable deposit of lead, in the form of sulphuric earths, known in commerce under the name of *alcohol.* It is sold in this state to the potteries of the country, for about 8 francs per quintal; and the metal, obtained by fusion, for 13 francs. Mixed ores, equal to those of Gador and Almagrera, above mentioned, are of frequent occurrence in Murcia—a province abounding in lead of several kinds, yielding silver in various proportions.

The mine of *Parvenir* yields sulphuretted leads, in contact with iron and pyritic copper. The ore, when separated from the rock, is found to contain 60 per cent. of lead, and 2·58 ounces of silver per quintal. There are some crystallized galenas, combined with blende and with pyrites, which yield no more than 14 per cent. of lead, and yet are worked at a profit, on account of their containing silver in the proportion of 2 ounces to the quintal. Carbonated leads are as abundant in this province of Murcia as the sulphuretted leads. They yield 25 per cent. of lead and 1 ounce of silver, or 37 per cent. of lead and 1·37 of silver.

In the collection there are galenas from the province of Saragossa, equally rich in silver. The sulphuretted lead is sometimes found combined with antimony. The proportion, in ores that have been brought from the Ascension mine, at Munebrega, are—22 per cent. of lead, 8 per cent. of antimony, and 2 ounces of silver per quintal.

In Catalonia there are numerous beds of sulphur of lead. The mines of Falset, near the village of Belimun, in the province of Tarragona, have been worked from a period of remote antiquity. According to the metallurgic richness of the veins from whence they are extracted, these ores sell at 38 or 40 reals the quintal. At Guipuzcoa, in the Basque provinces, we meet with galena mingled with blende. At Lordia (canton of Berastegni), this mineral is found superposed on spathic iron about 3 feet 3 inches in depth, in a bed of the average thickness of 2 feet, and in considerable blocks or masses. Another and neighbouring locality, at Vizcoch, yields a similar mineral, as may be seen in the collection; and this ore it is proposed to dig for. When blende, in formations of this kind, becomes very predominant, as happens at Miatzegorrieta, the mine is worked with a view to the yield of zinc only. Galenas are found in the same province, but nearer to the frontiers of France, at Mocosorrote, Olaquineta, Alzarrote, Lastaolaburne, &c.

The carbonated and phosphated leads of the province of Zamora contain, also, sulphur of lead and antimony, with a small admixture of silver, in the proportion of $\frac{1}{609}$. Lead enters into this admixture in the proportion of 42 per cent., and the veins are about 1 foot thick. The fusion is difficult, on account of the antimony and the arsenic that are combined in this ore. The Asturias are rich, likewise, in common and in argentiferous galenas. The association called "Union Asturiacha" works the second kind only. The common varieties, although extremely rich (seeing that some of these ores, such as that of the Cangas de Tineo, contain 70 per cent. of lead), are not at present the objects of mining adventure or operations. In the interior of the peninsular, in the province of Salamanca, there are veins of sulphuretted and carbonated lead; but neither of these has yet induced the undertaking of any extensive workings. It is only in the potteries of the country that a small portion of the sulphur, which is sold for 50 reals the quintal, is consumed. The smelted leads that are procured in Murcia contain, generally, some silver, and this is separated by cupellation. The quantity varies from half an ounce to as much as 8 ounces per quintal of this metal. There are other kinds, derived from ancient scoriæ and litharge, which do not contain more than 5 ounces of silver per ton. In the "*Pattinson* cauldrons" as they are called, they have introduced the method of crystallization. Leads which do not contain more than 30 ounces of silver per ton are concentrated till they yield 154 ounces. The last result of the continued crystallizing process gives leads with only half an ounce of silver per ton. The leads elaborated in the foundry of Adra come from the Sierra de Gador. The silver obtained from the furnaces of Almeria (the galenas of which fetch 240 reals the quintal), is exported almost entirely to foreign markets. A great proportion of it subsequently returns in the shape of money, such as five-franc pieces, upon which the usual exchange in Spain (namely, a value of 19 reals) secures a sure and ready profit.

The variety and richness of the ores of lead which are diffused through the soil of Spain are really astonishing. There is scarcely a single province of the monarchy in which they are not to be found in greater or less abundance; whether the ore contain simply lead and sulphur, or be in combination with antimony, iron, or zinc, or, still more especially, with silver—as in many varieties of galena that are excessively rich in this last metal.

The galenas of Almeria, of the celebrated Sierras of Gador and of Almagrera, are almost entirely of silver. They are sold in their rough state at from 40 to 240 reals the quintal. There are some—those of Padules, for example—in which sulphur is mixed with carbonate, and there is no silver. These sell for about 5 francs the quintal. The lead extracted realizes about 55 reals. But there are galenas, on the other hand, which contain sometimes a pound of silver per quintal, and which are sold at a much higher price. The large mass that is to be seen at the Exhibition comes from the rich vein of Juroso, in the Sierra d'Almagrera, and it contains, upon an average, 13 ounces of silver per quintal, and 43 per cent. of lead.]

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12 The Factory of S. Pedro de Araya, *Alava.*

1 and 2, Specimens of sparry-iron, from the Sierra de Arlaban; found in a vein four yards thick, easily worked. 3, The same ore calcined.

4 and 5, Red hæmatite, from the same Sierra, in rounded pieces and nobs.

6 Fire sandstone, from the vicinity of Araya.

7 Castinas, from the same place.

8 Coal, from Asturias.

9 Charcoal, made from the wood of the beech.

10 Grey furnace-scoria; 11, clear grey; and 12, that called *blanca atruchada.*

13 Scoriæ from the upper furnace.

14 Iron, raw; 15, refined; 16, drawn; 17, and completely refined.

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13 The Inspector of Mines of the District of Almeria.

1 Argentiferous galena, from Sierra Almagrera—the greater portion exported to France.

2 Silver, refined at Cuevas, in the Soler Factory; accompanied by samples of the argentiferous galena, from which it is produced; and others of lead of different qualities—the inferior kind is principally exported.

3 Silver, from the Carmen Mine, in the Sierra Almagrera.

4 Galena, from the Sierra de Gador. The variety called "Metal acerado," is the richest in lead of the best quality.

5 Galena, from the same Sierra. This variety is called "Metal de hoja," the most valuable of the produce of the Sierra and much exported.

6 Galena, from Padules, a mine newly opened.

7 Galena, from the Sierra de Gador. The variety called "Metal de luz," is also rich in lead of the best quality.

8 Galena, from a newly opened mine in Padules, Sierra de Gador, and principally exported.

9 Galena *(de hoja)*, or leafy, with blende and sulphuret of iron. The mines are not worked in consequence of the difficulty of reduction.

10 Galena, from Carboneras. A vein which has only recently been commenced working.

11 Carbonate of lead from Padules. Very abundant, and chiefly exported.

12 Lead of best quality, which is nearly all exported.

13 Lead of best quality, obtained from the ores of the Sierra de Gador, and principally exported.

14 Sulphuret of mercury, from Tijola.

15 Sulphuret of mercury, from Bayarque. These veins are not worked at present.

16 Quicksilver, obtained from the preceding ores.

17 Blue and green carbonate of copper, from Velez Rubio. Not now in operation.

18 Carbonate and oxide of copper, from Bayarque.

19 Argentiferous, grey, or carbonate of copper, from Velez Rubio.

20 Copper, refined in the Factory of San Miguel, district of Benahadus.

21 Grey copper, worked in the district of Turre.

22 Micaceous iron, with hydroxide, from Bacares.

23 Iron, of great softness, obtained at a factory in Bacares; smelted in a Catalonian furnace, by using oak and other charcoal, and principally consumed in the immediate neighbourhood.

24 Soft iron, from Ohanes, obtained from the iron-clay worked in the town of Beires, which produces, in a Catalonian furnace, twenty-four arrobas of twenty-five pounds each, per day.

25 Potash, made in the district of Maria. This is the produce of the first washings of the ashes, it is afterwards calcined and refined, and is entirely consumed in the peninsula.

26 Potash, calcined, produced from the vegetable ashes in the same district.

27 Nitrate of potash, from a factory in the district of Cuevas, obtained from the organic detritus gathered in much frequented roads and other places; it is entirely consumed in the country.

28 Kaolin, from Nijar. Found in great abundance, and used at the earthenware factory of Seville.

29 Puzzolana, from Nijar, the soapstone of Somontin. It is very abundant, and supplies some textile factories in Catalonia.

30 Fire-clay, from Sorbas. At present solely employed in the manufacture of earthenware, but it might be used in the making of good fire-bricks and crucibles; it only requires a due admixture to counteract the effect of the oxide of iron which it contains.

31 Thirteen samples of sheet lead, made by cylinders, from a quarter of an inch to one thirty-fourth part of an inch thick, and from six and a half to seven feet wide; made of lead produced from the ores of the Sierra de Gador, for home consumption and exportation.

32 Lead in tubes, obtained from the works of the Sierra de Gador.

33 Samples of white-lead, manufactured from the lead of the Sierra de Gador.

34 Samples of white-lead, prepared with oil, for painting.

35 Roquetas salt.

36 Breccia-form marble from Almeria.

37 White marble from Macael. This and the gray marbles are abundant. It is used for baths, chimney-pieces, consoles, and other articles; and the finer grained for sculpture.

38 Grey marble, from Macael. Found in abundance.

39 Marble, from Dalias. Abundant.

40 Black marble, from Dalias. Abundant.

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14 The Linares Lead Mining Association, *Offices in London, 2 New Broad Street*—Proprietors.

Four specimens of lead ore from the mine of Pozo Ancho at Linares, in the province of Jaen, Spain.

[The Linares mines were worked half a century since, and abandoned; but, since the processes now employed for desilverizing lead have been introduced into Spain, these, and many other lead and silver mines have been put into active operation.—R. H.]

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15 The Inspector of Mines of the District of Asturias, *Oviedo*—Producers.

1 Blue carbonate of copper, from the Milagro mine; found in lumps of different sizes, and all exported.

2 Green carbonate of copper, from Mieres.

3 Cinnabar, from Mieres; 4, from the Deseada mine; 5, from the Considerada mine; and 6, from the Paillett mine. This ore is of good quality, and is found in lumps of different sizes. The whole of the quicksilver produced at these mines is sold to the Government.

7 Sulphuret of lead from the Trapisonda mine; and 8, from the Conde de Toreno mine. These ores contain seventy per cent. of lead.

9 Calamine, from the Casualidad mine;

10 Peroxide of iron, from Castañedo del Monte;

11 Ferruginous sand, from San Andres;

12 Peroxide of iron, from the district of Bayo;

13 Hydroxide of iron, from San Claudio.

At the above works, the mineral is found from three-fourths of a yard to one yard in thickness, and is used at the Royal Manufactory of Trubia for cannon and machine casts.

14 Red oxide of iron, from the district of Colunga.

15 Hæmatite, from Mount Aranio.

16 Oligiste of iron, from Mount Aranio.

17 Quicksilver, from the distillations made by the Anglo-Asturian Company, at their works in the district of Mieres.

18 Quicksilver, from the distillations made by the Union-Asturian Company, at their works in the same district.

19 Coal, from the mines of D. Leon Lillo, district of Sama de Langreo; 20, from the Leonesa-Asturian Company, district of Pola de Lena; 21, from the Anglo-Asturian Company, district of Muros; and 22, from the Investigadora Company, district of Siero. Generally found in veins of half a yard in thickness.

23 Coke, from the mines of the Duke of Rianzares in the district of Langreo.

24 Black marble, veined with spar, from Hevia, district of Siero.

25 Breccia marble, from Latores, district of Oviedo.

26 Red marble, from Navanco, district of Oviedo.

27 Red marble, veined with spar, from S. Julian de los Prados, same district.

28 White marble from Lozana, district of Pilona.

16 The INSPECTOR of MINES of GRANADA.

1 Tortoiseshell marbles, with whitish veins; from the district of Alfacar.

2 Ash-coloured marble, with yellowish veins; from the district of the town of Montefrio.

3 Reddish-grey marble; from the Sierra Elvira. Useful for monumental architecture, and capable of high polish.

4 Red marble, with yellow, green, and white veins; from the district of Valle de Luque.

5 White marble; from the district of La Peza.

6 Red marble, with darker veins of the same colour; from Alora.

7 Dark-grey marble, with white veins; from Pinos-Puente (Sierra Elvira).

8 Black marble, with white veins; from Sierra Nevada.

9 Dark-grey marble; from Cacin.

10 White marble, with blue veins; from Loja. Scarce and of good quality.

11 Marble, with blue and yellow veins; from Alora.

12 Ash-coloured marble, with dark veins; from La Peza.

13 Jasper marble, dark or brown, with a white vein; from the Sierra Elvira.

14 Chestnut-coloured marble, with white veins; from Lanjaron. Scarce and valuable.

15 Chestnut and white marbles, from Lanjaron.

16 Grey marble, with white veins; from Sierra Elvira.

17 Serpentine; from Huejar Sierra. The quarry known from a remote epoch.

18 Cobalt ore; from the Leon de Oro mine, in the Sierra de Baza.

19 Oxide of cobalt; from Albunuelas, where it is found in the greatest abundance.

[The specimens of this mineral substance that are deposited in the Exhibition come from the Sierra de Baza (province of Grenada), where the workings have been very lately established; and from Albuñuelas, in the same province, in its state of an oxide; but the mining operations for this latter have met with an accidental interruption. We have heard of other works that exist in Upper Arragon, near the Pyrenees, and in the kingdom of Valencia, but of these the Exhibition possesses no specimen.]

20 Ore of sulphuret of copper; from the Rafaëla mine in the Sierra Nevada, district of Huejar Sierra.

21 Specimens of ores of lead and zinc; from the Sierra de Gor, near Guadix, and found in very irregular deposits imbedded in the transition limestone, similar to that of the Sierra de Gador.

22 Sulphate of magnesia; from Cullar de Baza, where it is produced by the natural evaporation of a considerable spring situated in that district.

23 Auriferous sands, from the Barranco de Donna Juana, proceeding from the deposits made on plateaus interposed in the washings.

[There is reason to suppose that many very important deposits of metalliferous ore, besides the numerous and valuable quarries of marble, might very easily be worked in the south of Spain, and especially in the palæozoic and secondary rocks of Granada.

Gold has hitherto been discovered in but three districts of country, and those widely separated from one another—in Grenada, in the ravine of Doña Juana, among sands which are dug for the purpose of the lead-washings established there. The companies which have been associated here entertain sanguine hopes of the gold production of a country whose ancient renown for its grains of gold, wafted to and fro by the waters of the river Derro, has been so favourite a theme with our southern poets.

Some companies have likewise been formed for the purpose of digging the soil and working the auriferous sands that are frequent in the province of Leon, near the Galician frontier. In these localities grains of gold, tolerably large, are sometimes met with; but, generally speaking, these thin spangles of the metal (*paillettes*) are so imperceptible that they can scarcely be separated by mere washing. They are generally removed with the earth of sand which contains them. Gold, incrusted in quartz, has just been discovered in the province of Gerona. There is a specimen of it in the collection.]

17 The INSPECTOR of MINES of the DISTRICT of LEON.

1 Hydrous oxide of iron; this occurs in layers of 1·16 yards thick, which alternate with others of clay. From the district of Yugueros, corporation of La Ercina.

2 Peroxide of iron; from the district of Argolejo, corporation of Villayandre, found in veins of half a yard thick.

3 Hydrous oxide of iron; from the Saelites district, corporation of Cistiernia, found in bunches.

4 Ferruginous chalk-stone; from the Colle district, corporation of Bonar, found in continuous layers of ½ yard thick.

5 Iron-clay, from Saelites, corporation of Cisticrna, found in layers of great thickness, enveloping the bunches of hydroxide of iron; it contains 40 per cent. of iron.

6 Ferruginous sandstone; from the Alejico district, found in continuous layers of 3 yards thickness; it contains 30 per cent. of iron.

7 Grey pig-iron, produced from the former ores, smelted by the Palentina Leonesa Company in an English furnace; used for forging and casting.

8 White grey pig-iron, produced from the former ores; only used in forging.

9 Forged and refined iron, from the two former, which yield 72 per cent.

10 Kaolin, from the district of Gradoso, found in beds of large dimensions, and used in the fabrication of fire-bricks.

11 Kaolin, from Tejera, adapted for the manufacture of china.

12 Fire-clay, from Gradoso, found in layers beneath the Kaolin, and employed in making fire-bricks, in conjunction with the same.

13 Native gold, and auriferous earths from the alluvials in the valley formed by the river Pequeno, in the Upper Cabrera. These alluvials cover a large extent of surface in the province.

14 Coal, from the Sucesiva mine, Saelices district, found in a layer of 2·33 yards thick.

15 Coke, from the preceding, obtained in the open air, yielding 55 per cent.

16 Coke, from the same, obtained in close furnaces, yielding 65 per cent.

17 Marbles of various colours, from the neighbourhood of Bonar, and used in ornamenting edifices.

18 Marbles of various colours, from the neighbourhood of Cueta, used for the same purposes.

[The series of specimens of iron from the province of Leon includes a great variety of minerals, in which iron is present under various and different forms of oxidation and carbonization. Some descriptions of iron, called "argillaceous," and ferriferous gravels, are also very plentiful.

On the northern faces of the same class of mountains are found the iron ores of the Asturias. Their nature is identical with those of Leon—the same oxides, peroxides and hydroxides. The veins are extremely rich. The great foundry at Truibo employs the hydroxide in the casting of cannons and other objects, which were exhibited at the last Madrid Exposition. The bust of the King, which has been transmitted to London, is executed in this hydrous oxide. The Asturian specimens comprise "olignite iron" from Mount Arrario, and samples of a very rich ferriferous gravel from Mount Sant Andros.

In the same northern region of Spain, but somewhat more to the east, she possesses very rich mines in the provinces of Alava and Guipuzcoa. From these is produced the famous Biscayan iron, so carefully fluxed in the Catalonian foundries, and of whose products two pieces of artillery, forged by the partisans of Don Carlos in the city of Ouate, in 1837, are exhibited in the Great Gallery of the Exhibition Building.

The minerals of the Biscayan series are—spathic iron (from the Sierra d'Arbalan, where there is now being worked a vein of nearly 4 metres (13 feet) in thickness, and of which the iron sells on the spot at 2 reals (5½*d.*) the quintal, and reniform hematites. The pit-coal consumed in these foundries is that of Asturias. This mine is modern, and capable of producing 25,000 quintals of metal per annum.

Many districts of the province of Guipuzcoa, of Estragues (including the locality in which the very rich veins of Hereguijurla occur), of Andalusia (where the magnetic iron of Marbella is met with, which is employed in the two great mines the property of Señor Heredos), of Malaga, Beires, Becarés, in Andalusia, Pedroso,—abound, all of them, more or less, in iron of various kinds, and abundance of charcoal for smelting it.]

18 The Inspectors of Mines of Lugo, Orense, and Corunna.

1 Argentiferous ores, from the mines of Messrs. Remisa & Co.

2 Samples of lead, obtained in a large experimental foundry.

3 Specimens of tin, from the Avion mountains.

4 Specimens of Kaolin, fire-clay and fire-bricks, used in the Sargadelos factory.

5 Crucibles and fire-bricks from Lugo.

6 Fire-bricks, from the neighbourhood of Santiago.

7 1st. Nickel ore, from the neighbourhood of Cape Ortegal; 2nd. nickel, with efflorescences of native sulphate; 3rd. native sulphate of nickel, crystallized, proceeding from the natural vitriolization of ore No. 1; 4th. hydrated oxide of nickel, from the decomposition of the sulphate No. 3; 5th. pure metallic nickel, obtained from the reduction of the oxalate of nickel proceeding from the decomposition of the sulphate No. 3, and by the reduction of the oxide No. 4.

19 The Inspector of Mines of Malaga.

1 Galena, with iron pyrites, from Mijas. The vein now explored produces on an average 38 per cent. of lead, and 8 adarmes of silver per quintal of 100 lbs. Spanish.

2 Galena, with hydroxide of iron, from Mijas; this is reduced in Spanish reverberating furnaces.

3 Galena, fine grain, from the Sierra de Nerja, found in layers and bunches, in a crystalline limestone; produces good lead.

4 Galena, soft and antimonial, from the strata of Marbella, found of 60 yards thickness in the transition. Produce 40 per cent. of lead, and 2 oz. of silver per quintal.

5 Magnetic iron, from Marbella. This rich vein is worked from the surface; it gives on an average 60 per cent., and the annual produce amounts to 180,000 quintals.

6 Antimoniuret of nickel, from Carratraca; appears in nodules or nuclei, imbedded in a serpentine much pervaded by felspar.

[Nickel is met with in the vicinity of Cape Ortegal, in various conditions of combination. The specimens in the Exhibition are—of native sulphur, of chlorure, of oxide. The metallic specimen was obtained by the reduction of the oxalate product of the decomposition of the sulphate and the reduction of the oxide. In this metallic state the nickel sells for 100 reals, or more than 25 francs (1*l.* 0*s.* 10*d.*) the ounce; whereas the ore itself is not worth more than 8 reals, or 2 francs (1*s.* 8*d.*) the quintal. Sulphated nickel, in its native state, fetches, at most, but 20 reals or 4*s.* 2*d.* the ounce; and the hydrated oxide, which is obtained from the decomposition of the sulphate, about the same price. Very recently, the Spanish journals have announced the formation of a company at Malaga for the working of a mine of nickel, which has been discovered at the surface of the soil, among the mountains of Casarabonela, the ore of which sells, in the port of Malaga, at nearly 50 francs—2*l.* 1*s.* 8*d.*]

7 Graphite or black lead, from the Cueva Sibajas, in the Sierra Bernieja, district of Benahavis, found in knobs imbedded in serpentine. These mines have been worked for a century, and have produced more than 400,000 quintals. It has been surveyed to the depth of 70 yards.

8 Pyrites of iron and copper, from the Sierra Bermeja, district of Benahavis; it appears in threads winding in the serpentine.

9 Fictile or plastic clay, used for pottery; the finest is used for modelling figures.

10 Serpentine, with undulating and platy colouring, from Dialaga, district of Marbella.

11 Fullers' clay, used in the Antequera cloth and baize factories.

20 The Mining Inspectors of the Districts of Zamora and Salamanca.—Producers.

1 Carbonate and phosphate of lead, containing 42 per cent. of lead, and ⅙ per cent. of silver. It appears in a vein varying in thickness from 4 to 14 inches, in the mine of Santa Clara.

2 Argentiferous lead, produced from the former, in furnaces *de manga;* it contains small quantities of arsenic and antimony, which render its smelting difficult.

3 Silicate of antimony, containing 60 per cent. of antimony, found in a vein of from 6 to 24 inches thick in the Generala mine, in the same district.

4 Leafy-regulus of antimony, produced from the former.

[The Society of "Marte," in the province of Zamora, works an ore of antimony, samples of which may be seen at the Exhibition. It is a silicate. In the veins there sometimes are found round lumps (*noyaux*) of sulphuret of antimony, containing a little silver. These are fused in crucibles, set in small drawing furnaces, where they lose as much as 20 per cent. of the 60 per cent. of metal that the ore contains. At Ateca, likewise, in the province of Saragossa, they obtain ores of antimony, which sell at 45 francs the quintal. Antimony, in combination with nickel, is found, also, in the serpentine rock, with a great deal of feldspar, at Carratraca (province of Malaga), and sells for 5 francs the quintal.]

5 Ore of oxide of tin, partially argentiferous, containing 55 per cent. of tin, found in irregular veins in the Santa Clotilde mine.

6 Tin, obtained from the same mine.

[The Spanish collection offers but few samples of this valuable metal. These are supplied from three different districts of the Peninsula—namely, from the mountains of Arion, from the province of Lugo, and from the province of Orense, both in the kingdom of Galicia. This ore is sold at 70 reals the quintal, and the smelted tin at 395 reals, or 100 francs (*4l.* 3*s.* 4*d.*) per quintal. Another ore of oxidated tin, which contains some portion of silver, is quarried at Corrascolo, commune of Villadepera, in the province of Zamora. It yields 55 per cent. of tin. In the Exhibition are deposited specimens of tin from various mines now being worked in the province of Orense; also a single sample of the tin of Zamora.]

7 Fire-clay, called *barro de zamora*. Found in abundance, and used for the manufacture of kitchen utensils and crucibles.

8 Ore of hydrous oxide of iron, from the St. Antonio mine, at Alamos, district of la Alberca; it contains 45 per cent. of iron.

9 Ore of carbonate of iron, from the Beneficencia mine at Herrerias, district of la Herguijuela; it contains 40 per cent. of iron.

10 Ore of sulphuret of lead, from the Marilla mine, district of Campillo de Salvatierra; it contains 62 per cent. of lead, and is found in a vein of from 6 to 12 inches thick.

11 Ore of carbonate of lead, from the same mine; found in contact with the preceding, and containing 38 per cent. of lead, and $\frac{1}{13}$ per cent. of silver.

12 Yellow rock crystal, from the mine Carmen del Brazil, situated at Majaditas, district of Villasbuenas. It is worked like the topaz, and known in commerce by the name of the Bohemian topaz; it varies much in price, according to the clearness and colour of its crystals.

21 The Leonesa Asturian Company, *Pola de Lena, Oviedo*—Producer.

Specimens of steel.

22 Amor (D. Fernando), *Cordova*.

Ironstone from Villafranca. At this place the ore forms an entire mountain of considerable size.

23 Giró (D. Juan), *Malaga*—Producer.

Specimens of iron, from the works of El Angel.

24 The Pedroso Iron Company, *Pedroso, Seville*.

Specimens of cast, rod, and plate iron.
Mineral coal.

25 Fernandez (D. Valeriano), *Seville*.

Specimen of fine copper.

26 Ibarra (D. José Maria), *Seville*—Exhibitor.

Mass of copper.

27 The Inspector of Mines of the District of Palencia—*Province of Leon*.

1 Coal, from the mines of the town of Barruelos. Various veins have been discovered of 3, 8, and 12 feet in thickness: five of these mines are in operation.

2 Coke, from the same works: made in the open air, in heaps, which give 200 to 400 arrobas of 25 lbs. each, according to their volume. One hundred parts of coal produce forty-five of coke.

[The coal deposits of the Asturias are chiefly of the carboniferous period, and rise from beneath tertiary rocks, covering the plains of Leon and Castille. They are highly inclined, and consist of numerous alternations of grit and shale, with thin beds of limestone, together with coal seams, one of which is of good quality, and nearly 9 feet thick. After these, and below them, appear a multitude of other seams, of older date than the coal of other countries of Europe; and connected with these beds, but always below them, are several beds of hæmatite, one of which is of pure ore, 50 feet thick, and extending to a considerable distance. These coal-fields, on the whole, must be regarded as of great value and extensive range, though at present the means of transport are too imperfect to allow of them being worked to advantage.—D. T. A.]

28 The Inspector of the Mines of Soria.

Mineral asphalte, found in an extent of more than two leagues Spanish, impregnating sand-stone layers of considerable thickness, which form the base of the mountain range of Picofrentes.

29 The Inspector of Mines of the District of Cordova.

Specimens of marble:—

1 Marble, from Fuente de los Frailes.
2 Marble from the quarries of Acebuchar.
3 Marble from the same quarries, differing in the colour and direction of its vein.
4 Marble from Mojon, in the same formation.
5 Marble similar to No. 3.
6 Marble from Lanchares.
7 Marble from the same place.
8 and 9 Marble from the quarries of the Cerro de Nuestra Senora. Crystals of carbonate of prismo-rectangular form are abundant in the quarries.

[Cabra is situated amongst the triassic rocks of Spain, but, like many other localities in the Peninsula, is rich in metamorphic limestones and marbles.

The value of these marbles is infinitely variable, as well as their respective qualities of solidity and shading. There is a marble from Aspeitia, employed for table-tops and chimney-pieces, that sells as high as 2½ francs the square foot. Saragossa marble, in the rough block, sells for 1, 6, and even 40 reals the cubic vara (the vara being equal to 0·89 cent.), and, when polished, it fetches 10, 42, and 160 reals, respectively. The beautiful marbles of Madrid are priced at 2 francs, and those of Grenada from 2 up to 8 francs the cubical foot. The state of the roads and communications in those provinces is such as to render almost impossible the transport of heavy deadweight material, and at once limits the employment of these marbles to the richer classes of each country, and so maintains the high prices cited. Eight specimens are to be found in this collection of marbles from the Isle of Pines, in the near vicinity of Cuba, and in that locality marbles have long been found in great abundance, but without having yet been used in the rich Spanish colony in question, which absolutely imports others, notwithstanding, from Italy and the United States.

The alabasters and other varieties of sulphated limes come from Saragossa, Santander, and Murcia; the hydraulic limes from Alava, where they are sold at the extremely moderate rate of 18 reals the quintal. Another substance well deserving our attention is the phosphated chalk, or phosphorate of Logrozan, in the province of Caceres, in Old Estramadura. It is found in a stone-like state, and in sufficient quantities to prove the basis of useful investment; for its efficacy in imparting fertility to poor soils, and restoring those which have become exhausted, is beyond dispute. This valuable substance, however, like to many others, still awaits the industrial "hereafter" of Spain.]

30 ———, D. *Huelva*.

Samples of marble, from a quarry in the district of Fuente-heridos.

31 THE ROYAL LIBRARY *at Madrid.*

Marbles: Nos. 1—5 Different kinds. 6 From the River Pinzon, Asturias. 7, 8 Calatayud, Zaragoza. 9 Tortosa. 10 Biscay. 11 Anorve (*Navarre*). 12 Sierra de Moncayo (*Aragon*). 13, 14 Calatrau. 15 Puebla de Arbroton. 16, 17 Cuenca. 18, 19 Alcarria de Irriepar. 20, 21 Cogolludo. 22 Loronteras. 23 Cabrera (*Siguënza*). 24, 25 Unknown quarries. 26, 27 Caballar, Segovia. 28, 29 Montes de Toledo. 30 Banuela de Talavera de la Reina. 31 Montes Claros. 32 Buitrago (*Castilla la Nueva*). 33 Alabastro de Monasterio. 34—37 Valencia. 38 Murviedro, Valencia. 39 Calix, Valencia. 40 Almodovar. 41, 42 Murcia. 43—45 Granada. 46, 47 Malaga. 48, 49 Ronda. 50, 51 Cabra, Cordova. 52, 53 Moron. 54 Bailen. 55 Estepa. 56 Ayamonte. 57 Sierra de Gao. 58 Cordova.—Andalucia. 59 Sierra Morena. 60—63 Consuegra (*Mancha*). 64—66 Urda. 67, 68 Villamayor. 69, 70 Puerto Lapiche. 71, 72 Salceda. 73 Manzanares. 74 Santander. 75—83 Espejon. 84, 85 Lastra de Cuellar. 86 Castro Mocho. 87 Leon.—Old Castile.

[Spain abounds with crystalline rocks of all kinds, among which are included a vast variety of marbles in all conditions, from the finest statuary marble, to others which are only adapted for building purposes. The former are chiefly metamorphic, and of doubtful age, and occur especially in the Sierra Nevada. The oolitic rocks, which are developed to a great extent in Old and New Castille, and the cretaceous rocks of the northern districts of Spain, yield large supplies of the more varied and less perfectly crystalline varieties.—D. T. A.]

32 ———, D., *Saragossa.*

1 Marble, from Calatorao, Fuentes de Ebro, and Alhama; alabaster from Roden.

33 ———, D., *Oviedo.*

Jet, in the natural state, and polished, from the district of Villaviciosa. It is manufactured into various articles which are sold in the neighbourhood.

33A ———, D., *Canary Islands.*

Carbonate of soda, extracted from the Salsola soda, which is produced in great abundance in these islands.

Carbonate of soda (native mineral), of which there is a stratum running almost horizontally along the brow and the sides of the peak of Teneriffe.

34 SANTOS Y DIAZ, D. J., *Havannah, Cuba.*

Specimens of marbles.

35 The INSPECTOR of MINES of the DISTRICT of BURGOS.

1 Glauberite, from the mines of the town of Cerezo, found in great abundance, situated between horizontal layers of limestone and clay.

2 Crystallized sulphate of soda, produced from the Glauberite; 3, anhydrous, or calcined sulphate, from the same.

[*Glauberite* is an anhydrous sulphate of soda and lime, and is found chiefly in some parts of Spain, and at Vic (department de la Meurthe), disseminated in common salt. It has only been found crystalline, and the crystals injure on exposure to a damp atmosphere. In the *Polyalite* of Ischl, in the Tyrol, and elsewhere, potash replaces the soda; but in other respects the minerals and glauberite are identical. The district of Burgos is chiefly in the upper oolitic or cretaceous series.—D. T. A.]

36 The ANANA SALT WORKS, *Alava.*

Common salt. Native crystallized salt.

37 ———, D., *Alicante.*

Specimens of barilla.

38 ANGULO (D. ISIDORO), *Barcelona.*

Specimen of Barilla. Sulphate of soda extracted from running waters in the immediate neighbourhood of Cervera.

39 ELIAS (D. MIGUEL), *Barcelona.*

Native salt (*Sal gema*), from Cardona.

[The "sal gem" of English commerce is rock-salt, or chloride of sodium; "nitre" being nitrate of potash, or saltpetre.]

40 MAURAUDY (D. AUGUSTIN JUAN), *Carthagena, Murcia.*

Specimens of alum manufactured by the exhibitor.

41 SEMPERE DE (D. FRANCISCO), *Elche, Alicante.*

A lump of kelp, manufactured by the exhibitor from the plant of the same name cultivated in the province of Elche (*Salicornia*).

42 ———, D., *Granada.*

Seed and stone barilla.

[Barilla is prepared to some extent in the provinces of Valencia and Murcia, from the *Salsola sativa* and the *Salicornia*, which are there cultivated for the purpose. On the salt marshes and littoral deposits on the south-west coast these plants are met with wild, and are there used for the same purpose. Its commercial value depends on the per centage of alkali it contains.]

42A ———, D., *Cadiz.*

Crystallized sulphur, from the abandoned mine of Conil.

Ecume de mer (meerschaum), from San Lucar.

43 MAISTERRA (D. MIGUEL), *Lorca, Murcia.*

Native salt in crystals.

44 PAULO Y BARTOLINI (D. MANUEL), *Saragossa.*

Nitrate of potash.

45 ———, D., *Lorca, Murcia.*

Barilla plant, very large specimen.

Sulphurous marl and compact native sulphur, from the hills of Serrata, district of Lorca.

Alum, refined, used as a mordant, from the Barcelonesa factory in Mazarron.

Selenite, from the Serreta hills.

White lead: three specimens from the factory of Almarsa.

Stone barilla, or subcarbonate of soda, impure.

[It is a fact universally known, that on the southern coast of Spain, in many of the regions adjacent to her shores, and in the Canary Islands, the "*Salsola soda*," and other species of salts from whence the crystallized carbonate is derived, have been produced spontaneously, as at present, from time immemorial. But this branch of national industry has been seriously interfered with by the introduction into commerce of artificial alkalis. Yet the manufacturers of neighbouring countries in which natural kali abounds, continue, notwithstanding, to employ the Spanish product, in spite of its incontestible disadvantages for the saponification of oils. The Spanish collection comprises some natural alkalis of Alicant, Murcia, Barcelona, Granada, the Canaries, &c. The price of these rough salts, in the mass, is not less than 18 reals, or nearly 5 francs the quintal. The alkali of Murcia and that of Barcelona fetch sometimes as much as 11 francs the quintal.

Carbonated kali, in its natural state, is procured in the island of Teneriffe, in an almost horizontal bed, at the base of the Pic or Volcano of Teida. It is extremely plentiful in the province of Burgos, and is found imbedded in layers of argillaceous clay and sulphated chalks among the hills on the banks of the river Tiron, a tributary of the Ebro. This mineral is worked in situations where it can be dissolved in water, which is afterwards evaporated, in order to obtain the crystallized sulphate. When this product is calcined, it assumes the name of *sulphate anhidre*. In its first state it is sold for 3 reals the arroba; in its second, at double that price, that is to say, from 3 francs 25 cents. to 6 francs 50 cents. the quintal of 48 kilogrammes.

Saline springs are encountered likewise in many parts of Spain, the density of whose waters is from 7 to 8 degrees, Baume; their waters flow down from the hills, and are found to contain sulphuretted kali in solution. Such springs are to be met with at Cervera, in Catalonia.

Of still more recent origin are the excavations for Glauber salts. But a much greater scope for the sale of this product may be anticipated, and its much more lucrative employment, from the introduction of other branches of trade into Spain, where, at present, the whole consumption of sulphate of soda is actually limited to a single glass manufactory in the village of Rosas, province of Santander. The common salts to be seen in the Exhibition have been supplied exclusively from the provinces of Almeria and the salt springs of Alicant, in the province of Alava. From Cordova—a country celebrated for its richness in the "gem" salt—there are some very fine specimens; but a more extensive series would have been, at once, a much more varied and a much richer illustration of this class of minerals.]

46 Durango y Trigo (D. Ignacio), *Saragossa.*
Sulphur, from the mines of Teruel, &c.

[Sulphur is found in various regions of Spain, under all conditions—native, earth-combined, or in sulphuric nodules. It occurs abundantly, under the second of these states, in Murcia, where also we meet with pure sulphur. Sulphur is refined at Lorca, in a factory at which it is sold for 30 reals, or about 6 francs the quintal of 48 kilogrammes.*

In the Spanish Gallery, at the Great Exhibition, may be seen some very beautiful specimens of crystallized sulphur from the ancient but abandoned mines of Covil, in the province of Cadiz. The sulphur formation in which these mines have been excavated has lost its industrial value, but still retains all its claims on the attention of mineralogists and geologists. At Ternel, in the province of Salamanca, there are very extensive sulphur diggings. The sulphur is sold at various prices, according to the quality; in the rough mass or block (*pierre brute*), at 28 reals; in roll, at 40 reals; and as flour of sulphur, at 60 reals the quintal—respectively, 6*s.* 7½*d.*, 9*s.* 2¼*d.*, and 13*s.* 9*d.*, English, per cwt.]

47 Yust & Co., *Lorca, Murcia.*
Specimens of artificial sulphur.

48 Prats (D. Francisco), *Alava*—Producer.
Specimens of limestone and hydraulic lime.

49 Concha (D. Antonio), *Cáceres.*
Phosphorite of Estramadura.

[The phosphorite of Estramadura exists as a vein, or in veins, coming to the surface near Logrosan, a few leagues east of Caceres. The surrounding rocks are granite, on which it seems to rest, and clay slate, probably Silurian, which overlies it. The direction of the phosphorite is N.N.E. to S.S.W.; the width varies from 5 or 6 to 16 feet; its depth has not been proved to a greater extent than 10 feet, but is probably considerable, and it has been traced for some miles. It somewhat resembles wavellite in its star-like arrangement, and there appear to be several small veins besides the principal one. It contains 81·15 phosphate lime and 14 fluoride calcium. It is very indestructible, resisting the action of the weather, and not mixing with or qualifying the soil by ordinary disintegration. The means of transport are at present far too imperfect to allow of this mineral being made use of to advantage for agricultural purposes.—D. T. A.]

49a Cuesta (D. Agustin de la), *Santander.*
Sulphate of lime.

51 Ysasi (D. Manuel), *Ordnance of Toledo*—Manufacturer.
Large earthen wine-jar (Tiaja), manufactured in the village of Toboso, in La Mancha.

An original piece of the wall of the palace of the Alhambra at Granada.

53 The Aulencia Company, *Madrid*—Producers.
Fire-bricks.

[Refractory clays are exceedingly plentiful at Sorbas, in the province of Almeria; at Zamora, where they are used for making crucibles; at Leon, where they are found combined with kaolin, and applied to similar uses with that product; at Alcoa, in Galicia, &c.; kaolin is no less abundant. The Exhibition has some samples of kaolin from Nijar, province of Almeria, the quintal of which is worth about 3 reals or 80 centimes (8*d.*) It is employed, at Seville, in the manufacture of china-ware. In the same locality they procure a sort of puzzolana, or silicate of magnesia, the price of which is about 8 reals the quintal, and which is employed in the manufactories of Catalonia. There is also some kaolin to be found at Leon, in that district of pit-coal and iron-producing country, which we have already indicated—the price extremely moderate, the layers immense. It is sold at the foot of the quarries at 2 maravedis the quintal, equivalent to little more than 1 sous per 100 kilogrammes. Its use is limited solely to the making refractory bricks; but when it is known that it is in the same localities where pit-coal, woods of all kinds, iron clays of every descriptions, &c., are found in vast abundance, we cannot refrain from predicting a most flourishing industrial destiny to this remarkable mineralogical country.

The factory of Sargadelos employs the kaolins which are so abundant in Galicia; and the association established near Madrid, under the designation of "The Aulencia," makes also refractory bricks at 55 reals per hundred of the squared soil, and at 3½ reals the arroba of those of other forms—that is to say, little more than 8 francs per 100 kilogrammes. The plastic clays are of great variety, and some of them of remarkably fine grain. They are to be found diffused everywhere over Spain; but beyond the purposes of pottery, they are but little in demand. Of their superior quality a fair estimate may be formed from an inspection of the little figures or statuettes made in this material at Malaga, and representing Andalusians in various costumes such are to be seen in the Spanish collection.]

54 Teger & Co., *Segovia*—Manufacturers.
Pavement tiles.

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* The kilogramme being equivalent to 2 lbs. 3 oz. 4 dr. 16 gr. English, this quintal does not exceed 106 of our pounds.

55 Gonzalez y Valls (D. Rafael), *Valencia*—Manufacturer.
Twenty-two frames, with 204 faïence tiles.

55a The Apolytomene Company, *Madrid*—Manufacturers.
Specimens of articles made of apolizoo or artificial marble.

56 ——, D., *Albacete.*
Samples of wheat.

57 Badillo (D. José Maria), *Ciudad Real.*
Wheat of Ciudad Real of two kinds, *macho* and *candeal*, grown in the province.

58 Guzman (D. Roque), *Ciudad Real.*
Wheat of two kinds—*jijona* and *candeal*—grown in the province of Ciudad Real.

59 ——, D., *Almeria.*
Fine and rough sedge; wheat from the Sierra de Filabres; colocynth; sage (*Salvia officinalis*); estacarocin (*Peganum harmala*), used as a spice, and for dying red; common olive oil.

60 ——, D., *Huelva.*
Specimens of the best kinds of wheat grown in the province, which constitutes its principal riches.

61 Pinan (D. José), *Leon.*
Wheat without the ear (called *mocho ó chamorro*), grown in the province of Leon.

62 Nuno, D. Diego, *Guadalajara*—Producer.
White wheat from Tortola.

63 ——, D., *Oviedo.*
White wheat (*Escanda menör*).
White and yellow maize.

64 Cea (D. Pedro Antonio), *Leon.*
Wheat (called *Blanquillo; Triticum hibernum var.*) grown in the province of Leon.

65 Macorra (D. Fernando), *Malaga*—Producer.
Wheat grown in the same province; the variety is known by the name of *recio* or *claro.*

66 ——, D., *Valladolid.*
Specimens of wheat from Medina del Campo, Pedrosa, and Gomeznarro.

67 De Torres (D. Manuel Maria), *Seville.*
Wheat (called *cerrado de color*), grown in the province of Seville, from Arahal.

68 Ternero (D. Jose), *Seville*—Producer.
Wheat (called *pinton*), grown in the province of Seville, from Marchena.

69 Fernandez de Cordoba (D. Manuel M.), *Constantina, Seville.*
White wheat (known by the name of *papalina*).

70 Ginoves (D. José), *Segovia.*
Wheat (called *chamorro*) grown in the province of Segovia.

71 Becerril (D. Antonio), *Segovia.*
Wheat (*candeal*) grown in the province of Segovia.

72 ——, D., *Valencia.*
1 Rice, common, in husk, and white; 2, moscado; 3, long; 4, superior.
5 White wheat; 6, from Alberique; 7, canivano; 8, red; 9, ears of nine varieties of rice; 10, four varieties of maize.
11, Onions white "*Albarranas*" (*Vegiena scilla*).
12, Alubias del pinet. Legumes. 13, Chufas (*Cyperus esculentus*). 14, Mani. 15, Tares.

73 Enriquez, D. J. *Alicante.*
Sample of white maize.

74 Colom, D. J., *San Lucar, Cadiz.*
1. Barley, pearled, cultivated by the exhibitor in San Lucar. 2. Mustard seed, wild.

[Spain, owing to her geographical position, possesses the finest climate in Europe, and has the greatest range of vegetable productions. All the cereals, with the exception of oats, are grown in the more northern provinces, and in elevated districts; while the cotton-tree, the sugar-cane, and other tropical plants, are cultivated successfully in the south and west provinces. Although Spain possesses such great advantages, both in her climate and in the general fertility of her soil, the agriculture of the country is in a very backward condition. The production of corn is barely sufficient for home consumption. Her exports consist chiefly of articles peculiar to the country, such as wool, silk, wines, oil, cork-wood, dye-stuffs, &c.—J. W.]

75 Salido (D. Agustin), *Ciudad Real*—Producer.
Wheat (called *candeal de raspa*), grown in the province of Ciudad Real.
Guijas ó pitos, pulse.
Yeros, a species of lentil (*Ervum*).
Rye.

76 The Municipal Corporation, *Castellon.*
Maize *(Mazorca larga)*, grown in the same province. Cultivated in the vicinity of the city of Castellon, in two varieties—one white, and the other yellow; exported in large quantities, besides supplying the consumption of 40,000 inhabitants.

77 Penafiel, E., *Ciudad Real*—Producer.
Panic grain (*Ceuchrus spicatus.*)

78 Benito (D. Miguel), *Ciudad Real.*
Indian millet (*millium sorghum*).

79 ——. D., *Gerona.*
Maize, of two kinds. Weld.
Angelica (*sylvestris*). Valeriana (*officinalis*).

[Maize is the object of a culture much more general in the departments of the north and the south of Spain than rice, and constitutes a great resource for the food of the people. In Galicia it forms the basis of the food of the country people, under the name of *brona*, and in the shape of loaves of large size, which they have the art of preparing after a particular manner, and of rendering very agreeable. At Castellon de la Plata they prepare the maize flour after a similar manner. The maize of the south of Spain (which is to be found in the Exhibition), is remarkable for the thickness of the heads. The prices are very variable, and, it as luckily happens, have relation always to given measures of capacity of several kinds for which we cannot at the present moment assign the order of their rates correctly, nor specify any metrical equivalents.]

80 ——, D., *Granada.*

1 Wheat, "chamorro;" 2 wheat, "fanfarron lampiño;" 3 wheat, "cuchareta;" 4 White maize.

5 Sugar canes, from Almuñecar.

81 ——, D., *Huesca.*

Cereals, pulse, and fruits grown in the same province:—

1 White wheat (*Escanda menor*). 2 Wheat (*Candeal*). 3 Beans. 4 Round beans. 5 Almonds. 6 Walnuts. 7 Dried peaches.

82 ——, D., *Jaen.*

Dried peaches from Alcaudete and Bedmar.

Wheat, (called *Redondillo lampiño*), from Alcalá la Real, and from Ubeda (called *Fanfarron lampiño*).

83 Barrientos (D. Fernando), *Malaga.*

Maize, grown in the province of Malaga.

84 Piedrola (D. Manuel), *Malaga*—Producer.

1 Indian wheat, grown in the province of Malaga, cultivated in Churriana, being from the seeds of the 88th crop sown.

2 Batatin—sweet potato (*Batatos edulis*).

85 Casado (D. José Pedro), *Malaga.*

Wheat grown in the province of Malaga (of the kind called *chamorro*).

Sweet almonds (of the kind called *larga*).

Tares (*algarroba; Ceratonia siliquosa*).

86 ——, D., *Murcia.*

1 Beans (called *paniceras*). 2 Capsicum pepper, ground (called *de flor*). 3 Flour. 4 Madder root. 5 Root of *Anchusa tinctoria.* 6 Weld.

87 ——, D., *Murcia.*

1 Wheat (*racemoso;* many-eared); 2 white. 3 Panic grain, of two kinds.

88 Monfort, D. F., *Torrente del Cinca Huesca*—Producer.

1 Wheat grown in the province of Torrente de Cinca.
2 Rye grown in the same province.
3 Beans of two qualities.
4 Different grains peculiar to the same province.
5 Dried figs. 6, Dried peaches.

89 Martinez y Perez, V., *Valencia*—Producer.

Rice grown in the province of Valencia.

[The cultivation of rice in Spain is peculiar to the kingdom of Valencia, where it is carried on upon soils purposely inundated. Four specimens have been forwarded to the collection, under the designations of "Common rice" (*Oryza sativa*), at 14 reals the arroba; Moscoda or red rice (*O. rubra*), at 16 reals; and long rice (*O. elongata*), at 15 reals; Hermoro, or fair rice (*O. pulcherrima*), at 16 reals. These prices are equivalent to 32, 35, and 37 francs per 100 kilogrammes.]

90 Fernandez Vitores (D. Juan Manuel), *Valladolid*—Producer.

Wheaten flour of first, second, and third qualities.

91 ——, D., *Zamora.*

1 White wheat, from Hiniesta and Piedrafita de Castro. 2 Beans, from Puebla de Sanabria. 3 Flax, from Camarzana; 4 from Puebla de Sanabria. 5 Weld (*Reseda luteola*), from Zamora. 6 Lichen, from Puebla de Sanabria. 7 Chamomile, from Villafáfila.

92 ——, D., *Saragossa.*

1 Wheat (called *ambrilla*), amber. 2 Maize (yellow); 3 (*ambrilla*), amber.

4 Alubias de Moncayo. 5 Dried peaches, from Calatayud. 6 Walnuts, from Calatayud. 7 Dried figs, from Caspe. 8 Saffron. 9 Treacle, from grape sugar.

93 ——, D., *Huelva.*

1 Beans. 2 Large acorns, and branches of the oak which produces them. 3 "Grana" cochineal.

[A certain red colouring substance, known under the name of *Grana Kermes*, is collected from the shrubs and underwood of the province of Huelvas. We had suspected that this colouring matter was, in fact, identical with the minute insect which we find in *Quercus cochenilifer;* but, on a closer examination of the specimen that has been deposited in the Exhibition, we have our doubts about this fact. "Grana Kermes" is purchased at Valencia (where it is employed in some of their manufactures) at 9 reals, or, at the utmost, at 3 francs (2*s.* 6*d.*) per pound. In former ages, the collection of this substance would seem to have constituted a considerable branch of trade, for we have seen some ancient "ordonnances," and especially one of the year 1309, authorizing the collection of tithe on the "grana" gathered in Murcia and other districts of that bishopric.—R. de S.]

94 The Agricultural Board, *Malaga.*

1 Chick-pea ("*Garbanzo;*" *Cicer arietinum*), from Alfamate. 2 Walnuts, (called "*Fanfarronas*"). 3 Chestnuts. 4 Almonds. 5 Dried peaches.

95 Gil (Vicente), *Segovia*—Producer.

Chick-peas (*Garbanzos; Cicer arietinum*).

[*Garbanzos* is the grain or vetch of the *Cicer arietinum*, a plant widely diffused over, and of very general use in Spain, at the tables of the rich as well as at those of the poor, forming an indispensable and characteristic ingredient in the famous *olla-podrida.* It abounds in the two Castilles, and in the southern provinces, but is rare, or wholly uncultivated, in the northern provinces; in which, however, it is in equally general use. The qualities of the carbanzos, which are determined by their relative size and by the fineness of their meal (*fâte*), vary much; and the prices, of course, in proportion. Garbanzos of Valladolid range from 90 to 140 reals for the fanegua, or nearly 4 arrobas, or 50 kilogrammes. Those of Segovia fetch 100, 115, and 120 reals; those of Zamora (which are the celebrated kind of Fuente Sanco), at 120; of Malaga, at 170 reals. The prices of these products are always dearer on the coasts of Spain.]

96 ——, D., *Valladolid.*

Garbanzos (*Cicer arietinum*), chick-pea, grown in the province.

97 ——, D., *Alicante.*

Almonds:—"pestaneta;" "planeta;" "blanqueta;" "bitter;" "batle." "Zahina" (*Sorghum*). Indian millet.

98 Valgoma (Francisco A.), *Cacabelos, Leon.*

1 Dry chestnuts. 2 Beans. 3 Beans of superior quality. 4 Various skeins of combed flax.

[Chestnuts abound in the two extreme zones of Spain, the north and the south. The same observation holds good as to the greater dearness of this fruit on the seacoast, where the trade is active, as we have recently made on another product.

Haricots (beans) are known in Spain under the different names *judias, habas, frijoles, alcivias,* &c., representing very distinct varieties, all of which are cultivated in the several provinces. They might be made to constitute, as well as the other farinaceous fruits of Spain, an important branch of her export trade, for they are raised in prodigious quantity and at a very moderate cost.]

99 The Agricultural Board of Cordova.

1 Dried figs. 2 Raisins. 3 Olives. 4 Zaragatona (*Psyllium*).

5 and 6 Mustard of Santaella.

7 Olive oil, drawn with and without pressure.

[There are four species of this class of products in the Spanish collection, namely — raisins, figs, plums, and peaches.

The qualities and prices of raisins are too well and generally known to require to be noted here in any detail. But very few specimens of them have been sent to the Exhibition.

The value of figs appear to be given at such very different rates as to make it a matter of too much difficulty for us to assign the cause of such differences. Generally, they do not exceed 20 reals the arroba, at Cordova and Malaga; but in the former of these provinces they sometimes rise as high as 60 reals. The figs of Huelva are quoted at from 25 to 30 reals the arroba; and in the interior, at Saragossa, they sell at 48 reals the fanegua.

Plums, whether those of Cordova or of Malaga, appear to bear the same price of 20 reals per arroba. The most celebrated kinds seem to be those of Briego and Mantilla.

Peaches are dried in the sun; and in that state are called, in Spain, "*arejours.*" The specimens in the Exhibition are from Jaen, Malaga, Huesca, and Saragossa. None have been sent by the other provinces.

100 Alvear (D. Juan), *de Cordova.*

Sweet-smelling prunes from Montilla.

101 Arambarri (D. Gregorio), *Cordova.*

Sweet-smelling prunes.

103 Arambarri (D. Gregorio Antonio), *Cordova.*

Specimens of dried figs.

104 Labat (D. Manuel), *Cordova*—Producer.

Giant walnuts, of peculiar kind, grown in the province of Cordova; from Palma del Rio.

Honey from orange-flowers.

105 Casado (D. José), *Malaga.*

Muscatel raisins.

106 Enriquez (D. Joaquin), *Malaga.*

Specimens of dried figs.

107 Olmo (D. José), *Malaga*—Producer.

Prunes, cultivated at Priego.

Dried figs.

108 Márquez (D. José), *Malaga*—Producer.

Olives, cultivated in Alora and Casarabonella; they are very mild, and easily separated from the stone.

The abundance of the olive-tree plantations in Spain is well known. The specimens of species of the olive which are shown in the Exhibition may give some idea of the beauty of this fruit, both at Cordova and at Seville. The specimens from other provinces are not so remarkable for their size, but they do not yield less oil. We notice them here considered as an article of our table fruits, dressed after the Spanish manner, with some salt and laurel leaves. There are numerous varieties of the olive throughout the whole south of Spain, in Andalusia, Valencia, Murcia, &c. Branches of the tree prepared, as for a herbal, were sent over, but do not figure in the Spanish Gallery on account of the space they would have occupied. The value of olives of Cordova, which are the most famous of all, varies from 70 to 90 reals, the fanegua; those of Malaga and Seville, to 50 reals; and the largest of this latter province, to 120. But everywhere the prices vary of course with the size and the flavour of the olives.]

109 Board of Trade of Reus.

Almonds.

[Almonds are a fruit much less widely diffused than the walnut, the limits of their production in Spain being bounded by two zones sufficiently remote from one another, on the Mediterranean and on the Cantabrian coasts. Almonds are sold by weight or by measure, and the value of the latter, in each province respectively, it is difficult to determine. There are five varieties of this fruit in the Spanish collection. At Tarragona the cultivation of almonds is very considerable, and the production is said to amount to 60,000 *cuarteras*, a measure of capacity equal to about 1½ faneguas of Castille.

110 ——, D., *Oviedo.*

Hazel nuts, chestnuts, and walnuts, principally exported to England.

The walnut-tree is celebrated throughout almost every region of the Peninsula. The most remarkable of the fruit sent to the Exhibition came from Cordova and Malaga, where they are sold by the hundred; in the other provinces, by the fanegua measure.

Hazel-nuts, which are equally abundant with almonds, have been transmitted to the Exhibition from Tarragona, Gerona, and Oviedo, countries for which the exportations of this fruit are quite remarkable. The nuts of Oviedo are the finest. The annual collection of this fruit amounts to 100,000 *cuarteras* at Reus and Falset.]

111 Zambrano (D. José), *Seville*—Producer.

Olives (of the kind called *de figura*).

112 Carabé (D. Manuel), *Seville.*

Olives (of the kind called *manzanillas de la reina*).

113 Lesaca (D. José Joaquin), *Seville.*

Giant olives (*gordales*), from Padron.

114 The Board of Agriculture, *Tarragona.*

1 Almonds. 2 Hazel nuts.

115 ——. D., *Badajoz.*

Sweet acorns.

116 Pardo y Bartolini (D. Manuel), *Zaragoza.*

1 Zaragatona (*Plantago psyllium*).
2 Zaragatona (*Lichen pulmonarius*).
3 Bryony (*Bryonia alba*).
4 Houndstongue (*Cynoglossum officinale*).
5 Viper's bugloss (*Echium vulgare*).
6 Melilot (*Trifolium melilotus*).
7 Liquorice (*Glycyrrhiza glabra*).

117 Isern, D. J., *Barcelona.*

A collection of plants :—

1 Antirrhinum asarina.
2 Aquileia vulgaris.
3 Asphodelus fistulosus.
4 Andryala incana.
5 Anthyllis tetraphylla.
6 Anthyllis cytisoides.
7 Acer hispanicum.
8 Acer monspessulanum.
9 Acer platanoides.
10 Anagallis cærulea.
11 Asplenium trichomanes.
12 Asplenium scolopendrium.
13 Arbutus unedo.
14 Althea officinalis.
15 Atropa belladonna.
16 Buphtalnum spinosum.
17 Bupleurum pyrenæum.
18 Bupleurum fruticosum.
19 Betonica officinalis.
20 Convallaria polygonatum.
21 Convallaria verticillata.
22 Calendula officinalis.
23 Conyza intermedia.
24 Conyza squarrosa.
25 Colutea arborescens.
26 Carduus marianus.
27 Cynoglossum pictum.
28 Capparis spinosa.
29 Coris monspeliensis.
30 Coriaria myrtifolia.
31 Digitalis lutea.
32 Daphne mezereun.
33 Euphrasia lutea.
34 Euphrasia officinalis.
35 Erodium supracanum.
36 Echium violaceum.
37 Eryngium maritimum.
38 Fraxinus excelsior.
39 Gladiolus communis.
40 Globularia nana.
41 Globularia vulgaris.
42 Globularia alypum.
43 Galeopsis ladanum.
44 Galeopsis tetrahit.
45 Humulus Lupulus.
46 Hyssopus officinalis.
47 Ilex aquifolium.
48 Lithospermum officinale.
49 Lonicera caprifolium.
50 Lonicera xylosteum.
51 Lamium amplexicaule.
52 Lavandula stœchas.
53 Lilium martagon.
54 Melilotus parviflora.
55 Myosotis palustris.
56 Marrubium vulgare.
57 Melissa grandiflora.
58 Narcissus juncifolius.
59 Nepeta cataria.
60 Orchis bifolia.
61 Orchis maculata.
62 Osyris alba.
63 Olea sativa.
64 Prenanthes purpurea.
65 Phlomis lychnitis.
66 Phlomis herbaventi.
67 Punica granatum.
68 Poterium sanguisorba.
69 Psoralea bituminosa.
70 Prunella grandiflora.
71 Passerina hirsuta.
72 Ranunculus bulbosus.
73 Ranunculus gramineus.
74 Ramonda pyrenaica.
75 Rubus fruticosus.
76 Rosmarinus officinalis.
77 Rubus idæus.
78 Sambucus racemosa.
79 Satureja montana.
80 Scrophularia nodosa.
81 Solidago virga-aurea.
82 Saxifraga cotyledon.
83 Sideritis hirsuta.
84 Stachys hirta.
85 Stachys maritima.
86 Sinapis nigra.
87 Stachys sylvatica.
88 Sanicula europea.
89 Salvia officinalis.
90 Smilax aspera.
91 Trichonema bulbocodium.
92 Tamus communis.
93 Taxus baccata.
94 Thymus acynos.
95 Thymus serpyllum.
96 Teucrium chamæpitys.
97 Teucrium polium.
98 Teucrium scorodonia.
99 Viola canina.
100 Veronica latifolia.
101 Veronica officinalis.
102 Veronica anagallis.
103 Verbascum thapsus.
104 Vinca minor.
105 Viburnum tinus.

These are all indigenous plants, the greater part growing at Monserrat, Monsen, and Monjuich, and many peculiar to Catalonia.

118 Alvarez, Calleja, D. S., *Villaviciosa, Oviedo*—Apothecary.

Extracts of aconite, belladonna, lettuce, foxglove, orange-peel, and of sarsaparilla.

Honey of sarsaparilla.

Prepared sarsaparilla.

119 ——, D., *Canary Islands.*

A small jar of *Euphorbia lathyris*, known in the islands as *tartaguillo;* abundant in Teneriffe, and medicinally employed.

Three samples of *Scilla maritima* (squill), found in great quantities on the north coast of Teneriffe.

120 ——, D., *Oviedo.*

A collection of medicinal plants :—

Prunus spinosa.
Valeriana officinalis, root.
Gentiana officinalis, root.
Carqueija, flower.
Digitalis purpurea, leaves.
Carqueija, slips, with flower.

121 Amor (D. Fernando), *Cordova.*

Albarrana. Sarsaparilla.

122 ——, D., *Gerona.*

Medicinal plants, growing wild :—

1 Belladonna.
2 Pulsatilla.
3 Gentian.
4 Turbet.
5 Alchemilla vulgaris.
6 Digitalis purpurea.
7 Onosma echioides.
8 Polygonum bistorta.
9 Cynoglossum.
10 Saxifraga granulata.
11 Arnica montana.
12 Arbutus uva-ursi.
13 Aquilegia vulgaris.
14 Tormentil.

123 ——, D., *Huesca.*

Herbs used in medicine, which grow wild in the province :—

1 Sage (*Salvia*). 2 "Dedalera," fox-glove (*Digitalis*). 3 Camomile (*Anthemis*). 4 Aristolochia (*Aristolochia*). 5 Liquorice (*Glycyrrhiza*). 6 "Zaragatona" (*Psyllium*). 7 Aconite or monk's hood (*Aconitum*). 8 "Lacineo." 9 Wormwood (*Artemisia Aragonensis*). 10 Wormwood (*Artemisia camphorata*).

124 Rodriguez Palencia (D. Manuel), *Leon.*

Violet flowers, from the mountain of Babia; arnica flowers, from the mountain of Valdeburon; lime flowers, from Valdeburon; lichen (*islandicus*), from Burdango.

125 ——, D., *Malaga.*

1 Artemisia arborescens. 2 Quercus torriglia. 3 Atropa belladonna. 4 Cotula aurea. 5 Viola odorata.

126 Bartolomé (D. Mariano), *Segovia.*

Sage (*Salvia officinalis*).

126a Gomez Alveric, D. Buenaventura, *Havannah.*

Various kinds of cigars.

126b Gonzalez Carvajal, D. M., *Havannah.*

Samples of cigars.

127 Durango y Trigo, Ignacio, *Saragossa.*

1 Lichen (*Cetraria islandica*).
2 Wormwood (*Artemisia absinthium*).
3 Sage (*Hepatica nobilis*).
4 Arnica (*Arnica montana*).
5 Foxglove (*Digitalis purpurea*).

127b Fernandez D. Fermin, *Havannah.*

Paper cigarettes.

128 Mirat (D. Gregorio), *Salamanca.*
Two packets of superfine starch, in stick and powder.

128a Academy of Medicine and Surgery, *Saragossa.*
1 Lichen islandicus; 2 Lichen pulmonalis. 3 Salvia officinalis. 4 Digitalis purpurea. 5 Anthemis nobilis. 6 Gentiana lutea. 7 Valeriana officinalis. 8 Aristolochia rotunda. 9 Arnica montana. 10 Atropa belladonna. 11 Sarsaparilla. 12 Liquorice.

129 Zabala, P. V., *Vittoria.*
Extract of aconite.

130 ———, D. *Almeria.*
Wheat from the Sierra de Filabres. Colocynth. Sage. Estacarocin, used as a spice, and for dyeing red.

131 ———, D., *Palma, Balearic Isles.*
"Majorca coralline" (*Fucus helminthocortis*).

132 The Agricultural Board of Castellon.
Branches of olive: varieties, called *Molvedrino, Morrudo, Fargo, Meno, Grosal, Blanco, Silvestre ó acebuche, Manzanillo, Colorado, Sevillano, Ulletrenco, Cuguello.*

133 Manso (D. Rafael), *Logroño*—Producer.
Preserved capsicums.

133a Vasquez (Ygnacio), *Seville.*
Liquorice.

134 Beck & Co., *Seville.*
1—3 Liquorice paste. 4 Root (*rhizoma*).

[The rhizomes of the *Glycyrrhyza glabra* furnish, on decoction, a dark-coloured extractive matter, containing a large proportion of sugar. This is inspissated in the usual manner, and forms the liquorice of commerce. It is grown and manufactured to a considerable extent in the provinces of Seville, Valencia, and Catalonia.—R. E.]

136 ———, D., *Huelva.*
Grana lieres; cochineal dye.

137 Gisbert (D. Joaquin), *Alicante.*
Gualda dye (*Reseda luteola*); dyer's weed.

["This is the weld of the English. It is a yellow dye, from a plant of the mignonette tribe."]

138 ———, D., *Cadiz.*
Madder root, of spontaneous growth, from San Lucar.

139 Cabello (Da. Encarnacion), *Ciudad Real* —Producer.
Samples of saffron (*Crocus sativus*).

[Saffron is in very general use in Spain, being employed in every kitchen for the seasoning or the colouring of certain dishes. Thus rice, vermicelli, &c., are never eaten without having undergone the previous process of being more or less tinted with saffron; manufactures absorb the smallest portion of its total consumption. It is very common in the hot and central provinces of Spain.]

139a Conti (D. Vicente), *Coruña.*
Beef, first and second quality.
Bacon, best, with and without bone.
Pork, cured in the American manner.

139b ———, D., *Oviedo.*
Hams, from Avilés.

139c ———, D., *Huelva.*
Honey from Hinojos; chief produce of the place.

140 Matezanz (D. Zacarias), *Segovia.*
Madder, from Cuellar.

141 ———, D., *Canary Islands.*
A bundle of *Rubia tinctorum* (madder), *Raiz de rubia*, very plentiful in almost all the islands.
Two small papers, powder carmine, prepared from the same.
A bundle of *Reseda luteola* (*Gualda*), abundant on the islands.

142 ———, D., *Valladolid.*
Madder, in plant, powder, and extract.

143 Semovilla (D. Rafael), *Segovia.*
Specimen of madder from Cuellar.

144 Matezanz (D. Augustin), *Segovia.*
Madder in powder.

[Madder known in Spain under the designation of "*rubia*," has been transmitted to London from seven different countries of the Peninsula. The coasts of Andalusia and of Valencia, Murcia, Segovia, and Saragossa, supply this article in large quantities. It is sold either in the fresh root, or reduced to powder, or as an extract. At Segovia and Valladolid it is largely employed in the numerous factories established there of coarse common cloths, called *Bayetes*, in which it is much used. The Canary Isles abound in madder, and the extract is sold under the designation of "carmine."]

145 Martinez (D. José), *Seville.*
Weld or *gaude* (*Reseda luteola*).

[*Gaude* (*Weld*, or *Dyer's Weed*), called "Guelda" in Spain, is as generally diffused over the soil of the Peninsula as madder, and, like it, it is produced spontaneously. The value of this commodity varies with the locality of its growth. Gaude is as plentifully distributed through the Canary Islands as madder. It will soon be ascertained that they can be made to produce cochineal equally well. In the province of Murcia, another colouring plant is also grown, namely, the *Anchusa tinctoria*, which vegetates particularly well along the maritime coasts.]

146 ———, D., *Valladolid.*
Sumach (*Rhus*) from Torrelebaton.

147 Marcos (D. Julian), *Valladolid.*
Extract of madder.

148 The Agricultural Board of Saragossa.

Vegetable dyes, from cultivated and wild plants:—
1 "Alazor" (*Carthamus tinctorius*). 2 Madder. 3 Sumach. 4 "Pastel" blue. 5 "Guelda" (*Reseda luteola*). Dyer's weed.

[*Pastel* is the colouring pulp extracted from the plant *Isotis tinctoria.* It is cultivated throughout the whole province of Saragossa, which has sent a specimen of this pulp, as prepared for the blue dye of stuffs. Adverting to this blue colour, we may mention that the southern provinces of Spain present large tracts of country in which indigo might be raised with advantage. Some attempts of this kind have actually been made at Seville, and have succeeded very well.]

149 CRUZ (D. J. DE LA) *Canary Islands.*
Specimens of cochineal.

150 MERON (D. ENRIQUE), *Malaga.*
Specimens of cochineal.

151 ALCAIDE (D. MIGUEL GOMEZ), *Malaga.*
Specimens of cochineal.

152 CALDERON (D. JUAN MANUEL), *Granada.*
Hemp (*Cannabis sativa*) raw and combed. Flax (*Linum usitatissimum*). Flax and hemp seeds.

153 The MUNICIPAL CORPORATION, *Castellon.*
Samples of raw hemp.

154 ———, D., *Murcia.*
Linseed. Cleaned hemp.
Rush (*Macrochloa tenacissima*), of spontaneous growth.
Fibre called *Pita*, of the *Agave Americana;* also of spontaneous growth.
Samples of hemp, unbroken and cleaned.

[*Pita* is the name of a species of hemp-like filament, or fibre, obtained from the American agave (not the aloe), and is raised in Murcia. This plant is abundantly diffused over the entire southern coast of Spain, and may become the staple of a great department of material industry. The present price realized by it is 48 reals the arroba. It is employed in the manufacture of rope, and certain other coarse tissues. The art of preparing the raw material is still very little advanced in Spain, into which new species of this plant, and of other varieties of the same family, might very easily be introduced from America.

Esparto is a name given in Spain to the herbaceous stalks of the *Machraclea tenacissima*, a plant peculiar to the arid wastes of different regions, and in very general use for the making of mats, sandals, cords, &c., and which may become of much greater importance when the art shall be discovered of extracting the finer fibres for other uses, and of employing the entire plant, reduced to pulp, for the finishing of paper, cardboard, &c. There are two varieties—perhaps, indeed, two species of esparto, commonly distinguished by their relative fineness. The specimens that have been sent from Spain come from the provinces of Huesca, Murcia, and Almeria. The trade in this textile article would seem to have engaged the attention of the Spanish Government during some epochs of the last century; for we have found several "Ordonnances" of the years 1783, 1784, and 1790, prohibiting the export of this material out of the kingdom.]

155 ———, D., *Saragossa.*
Hemp from Calatayud, raw and cleaned.
Flax, from Borja.

156 MARTINEZ, D. PASCUAL, *Valencia*—Manufacturer.
Samples of hemp cordage.
Thread for sail-making.
Sail-cloth, best quality.
Cotton stuff, *cotonina*, second quality.

[Cotton has yielded very abundant crops in Spain, especially on the coast of Andalusia, at Mobril. During the War of Independence, this circumstance proved highly advantageous to Catalonia, which could then command no other supplies for her manufactures from remoter quarters. But the lands on which this cotton has been raised have become exhausted by its continuous cultivation in successive years without manures. The consequence is, that this cultivation of cotton has been given up, for the plant had become too deteriorated for the crop to pay the expenses of growing it. The relations established between Spain and America have almost entirely changed the economic conditions of this product, though its culture is, at present, to some extent, reviving in Seville, from which province the specimens in the Exhibition have been furnished.]

157 SAGRA (RAMON DE LA), *Madrid.*
Vegetable and textile products from the Island of Cuba :—
1 Trunk of the plant *Lagetta lintearia*, showing the textile substance of the interior liber.

[The lace-bark tree is thus called because the films of the inner bark are so tough and so easily separable that they may be stretched laterally till they form a net-work of great delicacy and beauty. The films being, moreover, arranged in very numerous layers, which are also separable, a small piece of the branch of the tree will produce a large quantity of this natural lace.—J. L.]

2 Large piece of the interior liber of the same.
3 Cord made from the sub-cortical fibres of the same. This cord is preferred to all other kinds in the Island of Cuba on account of its great tenacity.
4 Cord made from the textile fibres of the leaves of the palm.
5 Mat made from the same substance.
6 Cord made from the textile fibre of the tree called Majagua (*Paritium elatum, Rich:*); much used in the island.
7 Yarn, extracted from the senegal hemp (*Hibiscus cannabinus*); acclimated in the Botanical Garden of the Havana.
8 Cord made from the same yarn.

[In order to supply some idea of the fibrous products furnished by the Spanish colonies, certain specimens from botanical collections made in the island of Cuba, have been transmitted from Spain to the Exhibition. "During our long sojourn in that island," writes M. Ramon de la Sagra, "we recommended the cultivation and industrial improvement of a great number of plants hitherto much neglected, and more especially of those composing the section of *Monocotyledons*, whose textile, long, silky and resisting fibres are drawn from the leaves, and not from the stalk or the bark." In reference to this subject we have instanced various species of the "pita," which it would be easy to introduce from the continental coast of Guatemala[*] and of Columbia.[†] These are known under the names of "Cabulla," "Cocaiza," &c. Some species of the *Bromelia* and of the *Fourcræa* supply, also, excellent fibres; and all the leaves of the palm-tree, in this respect, may be advantageously made use of. We have sent some specimens of this class to the Exhibition, as well as of the *Puritium elatum*, of the *Hibiscus cannabinus*, and of the curious corticular coats peculiar to the

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[*] Memoirs of the Agricultural Institution of Havanna, 1834.—(*Memorios de la Institucion Agronoma de la Habana, &c.*)
[†] "La Côte ferme," &c. The old "Spanish Main."

Lagetta lintearia, or lace-wood (*Bois dentille*), of the island of Cuba. From *Puerto Rico* have been despatched filatures of the banana-tree, one species of which has been already acclimatized on the southern coast of Spain, where its cultivation may be much extended as a textile plant of extraordinary importance.

The Philippine Islands have supplied, among their beautiful embroideries, some samples of a delicate fibre, under the designations of "*Pina*," of "*Jussi*," and of "*Bejuca*," which they employ for the fabric (*tissage*) of their very fine stuffs. It is unfortunate that we are in want of information of a sufficiently precise nature upon the true species of plants that produce such precious textile fibres.—R. de S.]

158 ———, D. *Huesca*.

Vegetable productions used in manufactures:—

1 Rush (*Macrochloa tenacissima*). 2 Flax (*Linum*). 3 Hemp (*Cannabis sativum*).

[*Macrochloa* is, properly speaking, a grass, not a rush.]

159 Pinan (Juan), *Leon*.

Flax, uncombed.

160 Vinas, Andres, *Puerto Rico*.

Fibre, from the trunk of the plantain tree, in its raw state (*Musa sapientum*).

161 Heras (D. Perfecto de las), *Segovia*.

Raw flax; flax combed.

[Flax is cultivated in many departments of Spain; but specimens have been received from five of them only. The countries most rich in this culture, such as Galicia, the Basque provinces, and others, are not represented in this branch of the Spanish collection.

The value of the various descriptions in the collection varies very much, according to the good or bad heckling they have received. The flax of Borja, in the province of Saragossa, is very white and fine, and of extreme tenacity, sells, in its rough state, at 60 reals the Arragon arroba. The Iberian peninsula might be made to yield an immense production of flax; and, when the processes of its cultivation shall be more improved, she will, doubtless, furnish the finest qualities of this plant in profusion.

Hemp might be produced in Spain as generally as flax, but hitherto its cultivation has been but little extended. The collection in the Exhibition presents some magnificent specimens of hemp, the growth of Grenada, in its natural state; and also of some very remarkable dressed hemp, from the same district, as well as from Valencia, Segovia, and Murcia. More than 60,000 arrobas weight of these qualities are raised, and are for the most part consumed, in the manufacture of sail canvas.

162 Villars (Julian B.), *Seville*.

Raw cotton, growth of the province of Seville.

163 Ripalda, the Count of, *Valencia*.

Combed hemp.

164 ———, D., *Almeria*.

Common olive oil.

[The oils of Spain are more celebrated for their abundance than for their quality; but this circumstance is the result, exclusively, of the methods of their fabrication, which are kept up by the taste of the people—fond of mucilage—and by the dearness of all the means of land carriage; for these will not admit of any expenses being incurred in the preparation of native commodities which their selling price, in the trade, will not reimburse. But nothing would be more easy than for the Spanish oil producers to obtain good clarified oil, without any mucilaginous or empyreumatic flavour. Their olives are, intrinsically, excellent; and there are some kinds of them from which the fruit exudes, even without any pressure, the most delicious oils. In the Exhibition there are many specimens from different regions of Spain, and of very various value. That of Malaga, after undergoing filtration, is valuable proportionately in the same way as the refined oils of Valencia. This branch of the national industry has of late years received many ameliorations. The gathering and the choice of olives are better managed: the introduction of the hydraulic press permits a rapidity of elaboration that prevents the fermentation of the piled-up fruit; and the various qualities are conveniently classed. But the means of land carriage are still wanting. There is a vast consumption of oil in Spain, oil being an almost universal condiment with her people, and entering into the manufacture of soap, besides being required for the purposes of public and private lighting. Notwithstanding these several demands, however, the production greatly exceeds the consumption, and therefore requires suitable exterior channels for its more carefully prepared and purified products. When these channels shall be provided, the cultivators will realize those advantages that at present fall to the share exclusively of the factors at Marseilles. But the first object to be obtained for the cultivators is to facilitate the means of transport for their oils.

Other oils are manufactured in Spain, from walnuts and linseed, for consumption in the interior. The specimens of the former in the Exhibition are from the province of Oviedo.]

165 ———, D. *Cordova*.

Olive oil, produced from the wild olive.

166 Alvarez Calleja, D. S. *Villaviciosa, Oviedo*—Apothecary.

Nut oil.

167 Montesinos (D. C. J.), *Badajoz*.

Olive oil from Albuquerque.

168 Zayas (José), *Vega, Granada*.

Olive oil, from the village of Niguëlas.

169 Fernandez (D. M.), *Malaga*.

Olive oil, filtered.

170 ———, D., *Murcia*.

Linseed oil, made in Lorca. Liquorice.

171 ———, D., *Seville*.

Olive oil, of the best quality, made in the province.

172 Diez de Ribera, Antonio, *Santa Fé, Granada*.

1 Olive oil.
2 Cleaned hemp.

173 The Board of Agriculture, *Valencia*.

Olive oil of two qualities, produced by D. Vicente Tortosa; olive oil, produced by D. José Carrascosa.

174 The Count of Sobradiel, *Saragossa*.

Olive oil.

176 Enriquez (D. Juan Nepomuceno), *Velez Malaga*.

Refined sugar, from the cane grown in the neighbour hood of Malaga. Established at Torre del Mar, 1846, by M. Ramon de la Sagra.

["The history of the cultivation of the cane," M. de la Sagra observes, "and of the elaboration of its juices into sugar, in Spain, is extremely curious. We ourselves collected some notices, and published several memoirs, on this subject, at a period when we were occupied in the introduction of new processes, and steam machinery, for the improvement of this important branch of Spanish industry, on the coast of Andalusia. Since that time these perfected processes have so extended themselves that that beautiful country now produces white sugar of an excellent quality. The cultivation of the cane is making rapid progress. One single factory, that of the *Torre del Mar*, which was established by ourselves in 1846, has sent to the Spanish collection a specimen of its refined sugar. From the result of calculations made by us, when traversing the shores of Andalusia, in 1845, it appears that irrigated lands (*terreins d'arrosage*), where the cane can be cultivated, may be made to yield an annual crop of 25,000,000 kilogrammes (535,714 cwt.). The cane succeeds perfectly, and the mode of its cultivation leaves nothing to be desired. The species employed are the creole variety, and that of Tahiti. The former of these was actually imported *from* the coast of Andalusia, into the Antilles themselves, at the close of the 15th century."]

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177 Alvargonzales, D. R., *Oviedo.*
Preserved fruits and sweetmeats.

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178 ———, D., *Huesca.*
Chocolate. Cheese.

[It is a cause of regret that these important branches of rural economy are in a very backward condition. The nature of pastures of Spain communicates to the milk of the animals that are fed upon them, whether the cow, or the sheep, or the goat, the most remarkable properties. The richness of some of the milk in question for the making of butter is truly astonishing. But our dairy farmers are wholly ignorant of processes that are so commonly employed elsewhere in this department of their business. The introduction of some Flemish, Dutch, or Swiss families into the farms of Spain has become matter of absolute expediency; and these people, by merely instructing their Spanish neighbours in the art of keeping their butter and their cheese, might realize considerable profits.]

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179 Martinez (D. Serafin), *Vitoria*—Manufacturer.
Sweetmeats made from different fruits.

179a Zuluela, D. Julian, *Havannah.*
Samples of sugar.

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180 Molina (D. Antonio), *Ciudad Real.*
Virgin honey, from El Moral de Calatrava.

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181 Abad, D. Manuel, *Cordova.*
Honey of orange flowers.

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182 Colmenero, D. F. and J., *Guadalajara*—Producer.
Honey in the comb and clarified.
White and yellow wax.

[Wax and honey are both abundant and excellent. The variety of aromatic plants of the family of *Labiaceæ* (thyme) furnish the bees with ample materials for the elaboration of their useful toils. The description of honey called "azular," because it is furnished by bees which extract the pollen, and the saccharine principle of the nectars of the orange blossom is celebrated both at Seville and at Cordova. The honey of Huelvas, which is gathered in the village of Hinojos, and constitutes the principal branch of the riches of that country, is very valuable. In the same district they carry on a trade in wax to the value of 8,000 livres per annum.]

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183 Escudero, D. C., *Guadalajara*—Producer.
Honey in the comb.

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184 Centenera, E., *Guadalajara*—Producer.
Honey in the comb.

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185 Benjùmea (D. José Maria), *Seville.*
Honey "from orange flowers."

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186 The Agronomical Cabinet of the Botanical Garden, *Madrid.*
Specimens of woods, in Number 225, employed for furniture and ornaments, the produce of the island of Cuba.

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186 *List of Woods employed in the Island of Cuba for construction and other purposes. Sent from Madrid.* (Taken from the Botanical Section of the Natural and Political History of the Island of Cuba, by M. Ramon de la Sagra.)

Abey macho (*Jacaranda Sagræana*, D. C.)
Abey hembra (*Pœppigia excelsa*, Rich.)
Acana (*Sideroxylon pallidum*, Spr.)
Agracejo (*Ardisia cubana*, Alph. D. C.)
Agracejo carbonero (*Excœcaria ?*)
Aguedita (*Picramnia pentandra*, Sw.)
Almendro (*Laplacea Curtyana*, Rich.)
Almendro silvestre (*Dipholis salicifolia*, Alph. D. C.)
Ararà (*Bucida buceras*, Lin.)
Arbol del cuerno (*Acacia cornigera*, Lin.)
Ateje hembra (*Cordia Valenzuelana*, Rich.)
Ayua amarilla (*Zanthoxylum bombacifolium*, Rich.)
Ayua macho (*Z. lanceolatum*, Poiret.)
Ayua hembra (*Z. Juglandifolium*, D. C.)
Azucarero de montaña (*Icica Hedwigia*, Rich.)
Bagà (*Anona palustris*, Lin.)
Baria (*Cordia gerascanthoides*, Kunth.)
Bijaguara (*Colubrina ferruginea*, Brong.)
Boniato amarillo (*Nectandra boniato*, Rich.)
Biniato blanco (*Oreodaphne ? alba*, Rich.)
Brasil (*Cæsalpinia bijuga*, Sw.; *C. horrida*, Rich.)
Brasilete colorado (*Cæsalpinia crista*, Lin.)
Bucàre (*Erythrina umbrosa*, Kunth.)
Cabo de hacha (*Trichilia spondioides*, Jacq.)
Caja (*Schmidelia nervosa*, Rich.)
Caimito (*Chrysophyllum cainito*, Lin.)
Caimitillo (*C. microphyllum*, D. C.)
Canela blanca (*Canella alba*, Murray.)
Caoba (*Swietenia mahagoni*, Lin.)
Carne de doncella (*Byrsonima lucida*, Kunth.)
Cedro (*Cedrela odorata*, Lin.)
Ceiba (*Eriodendron anfractuosum*, D. C.)
Ceibon de arroyo (*Pachira emarginata*, Rich.)
Chicharron (*Chicharronia intermedia*, Rich.)
Cigua (*Nectandra cigua*, Rich.)
Ciguaraya (*Trichilia Havanensis*, Jacq.)
Ciruelo (*Spondias purpurea*, Lin.)
Cocuyo (*Brunelia nigra*, Sw.)
Copal (*Icica copal*, Rich.)
Copey (*Clusia rosea*, Lin.)
Cordoban (*Miconia pyramidalis*, D. C.)
Cuaba amarilla (*Amyris maritima*, Jacq.)
Cuaba blanca (*A. sylvatica*, Jacq.)
Cuajani (*Cerasus occidentalis*, Lois.)
Cùrbana, v. Canela blanca.
Dagàme (*Calycophyllum candidissimum*, V.)

Daguilla (*Lagetta lintearia*, Juss.; *L. Valenzuelana*, Rich.)
Ebano (*Diospyros?*)
Encina (*Quercus?*)
Frijolillo (*Lonchocarpus latifolius*, Kunth.)
Fustete (*Broussonetia tinctoria*, Kunth.)
Gia blanca (*Casearia alba*, Rich.)
Gia brava (*C. ramiflora*, Vahl.)
Goao (*Comocladia dentata*, Jacq.)
Goao de costa (*Rhus metopium*, Lin.)
Granadillo (*Brya ebenus*, D. C.)
Guacima amarilla (*Luhea platypetala*, Rich.)
Guacima baria (*Xylopia Cubensis*, Rich.)
Guacimilla (*Celtis macrophylla*, Kunth.; *C. lævigata*, Wild.)
Guacimilla de costa (*Prockia crucis*, Lin.)
Guaguaci (*Lætia apetala*, Jacq.; *L. longifolia*, Rich.; *L. crenata*, Rich.)
Guamà (*Lonchocarpus sericeus*, Kunth.)
Guamà de costa (*Malvacea?*)
Guana (*Malvacea?*)
Guara (*Cupania glabra*, Sw.; *C. tomentosa*, Sw.; *C. crenata* and *C. triquetra*, Rich.)
Guara colorada (*Cupania macrophylla*, Rich.)
Guavico (*Xylopia obtusifolia*, Rich.)
Guayabo agrio, G. silvestre, and G. cotorrero (*Psidium pomiferum*, Lin.)
Guayabillo (*Eugenia guayabillo*, Rich.)
Guayacan (*Guaiacum officinale*, Lin.)
Guayacancillo (*Guaiacum verticale*, Ortega.)
Guimbà, v. Guavico.
Guira cimarrona (*Crescentia acuminata*, Kunth.)
Guira criolla (*Crescentia cujete*, Lin.)
Hueso (*Drypetes alba*, Poit.)
Jaboncillo (*Sapindus saponaria*, Lin.)
Jagua (*Genipa Americana*, Lin.)
Jaguey hembra (*Ficus?*)
Jaguey macho (*Ficus populnea*, Wild.)
Jibà (*Erythroxylum brevipes*, D. C.; *E. obtusum*, D. C.; *E. Havanense*, Jacq.; *E. alaternifolium* and *E. rufum*, Rich.)
Jiqui, v. Cocuyo.
Jobo (*Spondias lutea*, Lin.)
Jocuma (*Dipholis salicifolia*, Alph. D. C.)
Jùcaro (*Bucida capitata*, Vahl.)
Laurel amarillo, v. Boniato amarillo.
Laurel blanco (*Oreodaphne? alba*, Rich.)
Laurel de cuabal (*Anona bullata*, Rich.)
Lengua de vaca (*Ægiphila Martinicensis*, Lin.)
Leviza, v. Laurel blanco.
Lloron (*Melania lucida*, Rich.)
Maboa (*Cameraria latifolia*, Jacq.)
Macurige (*Cupania oppositifolia*, Rich.)
Maco (*Drypetes glauca*, Vahl.)
Majagua (*Paritium elatum*, Rich.)
Majagua de Cuba, v. Guamà.
Majagua macho (*Belotia grewiæfolia*, Rich.)
Malagueta (*Eugenia pimenta*, D. C.; *E. Valenzuelana*, Rich.)
Manajù (*Malpighia?*)
Mangle blanco (*Avicennia tomentosa*, Jacq.)
Mangle colorado (*Rhizophora mangle*, Lin.)
Moruro (*Acacia arborea*, Wild.)
Moruro de costa (*Acacia litoralis*, Rich.)
Mora (*Morus celtidifolia?* Kunth.)
Nogàl (*Juglans cinerea*, Lin.)
Ocuje (*Calophyllum calaba*, Jacq.)
Palo blanco (*Simaruba glauca*, D. C.)
Palo cachimba, v. Vibona.
Palo de Caja, v. Caja.
Palo carbonero, v. Agracejo carbonero.
Palo santo, v. Guayacan.
Peralejo (*Malpighia?*)
Pico de gallo (*Cynometra cubensis*, Rich.)
Pimienta, v. Malagueta.
Pino (*Pinus occidentalis*, Sw.)
Quiebra hacha (*Copaifera hymeneæfolia*, Moric.)
Ramon (*Trophis Americana*, Lin.)
Raspa lengua (*Casearia hirsuta*, Sw.)
Roble amarillo (*Citharexylum caudatum*, Lin.)
Roble blanco (*Tecoma leucoxylon*, Mart.)
Roble guayo (*Ehretia Bourreria*, Lin.)
Roble negro and Roble prieto (*Ehretia tinifolia*, Lin.)
Sabicù (*Acacia formosa*, Kunth.)
Sangre de doncella, v. Carne de doncella.
Sapote (*Sapota achras*, Mill.)
Sapote de culebra (*Lucuma serpentaria*, Kunth.)
Sapote negro (*Diospyros laurifolia*, Rich.)
Torcido (*Mouriria Valenzuela*, Rich.)
Tengue, v. Moruro.
Ubero de playa (*Coccoloba uvifera*, Jacq.)
Vaca-buey (*Curatella Americana*, Lin.)
Vibona (*Erithalis pentagonia*, D. C.)
Vigueta de Naranjo (*Ilex cassine*, Aiton.)
Viriji (*Eugenia ferruginea*, Rich.)
Yaba (*Andira inermis*, Kunth.)
Yagruma macho (*Panax undulata*, Aub.)
Yaimiqui, v. Carne de doncella.
Yaicuage (*Hypelate paniculata*, Cambes.)
Yaiti (*Excœcaria lucida*, Sw.)
Yamào (*Guarea trichiloides*, Lin.)
Yana (*Ximenia Americana*, Lin.; *Conocarpus erecta*, Kunth.)
Yanilla (*Schmidelia Comminia*, Sw.)
Yaya (*Uvaria neglecta*, Rich.; *Oxyandra virgata*, Rich.)
Yaya cimarrona (*Mouriria myrtilloides*, Poiret.)
Yayajabico (*Colubrina reclinata*, Brong.; *Erithalis fruticosa*, Lin.)

187 The Economical Society of Manilla.

Collection of 213 different species of wood growing in the Philippine Islands.

Collection, in three frames, of the different qualities of tobacco-leaf employed in the Government factories in Manilla and other places. The leaf of Cagayan is the only one manufactured for exportation.

188 Guinart (D. Juan), *Seville*—Manufacturer.

Corks and bungs.

[Three provinces of Spain have sent to the Exhibition cork in the slab, and worked up into corks—namely, Gerona, Huelva, and Seville. In the first enumerated of these provinces, the cork trade is a very considerable one. The species of oak which produces the cork vegetates, freely, over the whole of the coast district, and over the versants or faces of the Pyrenees.]

189 ———, D., *Gerona*.

Cork, in sheets, and manufactured articles.

190 Castells (D. Joaquin), *Esparraguera*—Manufacturer.

Specimens of sail-cloth.

191 The Royal Arsenal, of Cartagena, *Murcia*—Manufacturers.

Rigging. Sail canvas.

192 Escudero & Azara, *Cerevera del Rio Alhama*, *Soria*—Manufacturers.

Sail-cloth, woven in hand-looms.

192*a* Berenguer, D. J. B., *Valencia*—Producer.

Specimens of cochineal.

193 Ortega y Soler, D. F., *Ferrol*, *Corunna*—Manufacturer.

Specimens of linen from the manufactory of Isabella II. Canvas, &c.

194 The Corporation of Castellon—Manufacturers.
Hemp sandals. Mule furniture. Linens.
Cables. Cordage. Lashings. Pack thread.

195 The Baron of Finestrat, *Alicante.*
Skein of silk.

196 Cruz, S., *Santa Cruz de Teneriffe, Canary Islands.*
Silk from the *Marselles* worm.
Silk from the *Trevoltino* worm.
Silk from both the former, crossed.

197 Pujals, D. Francisco, *Valencia*—Producer.
Skeins of silk, of 4, 5, 6, and 7 cocoons.

198 Gonzalez, D. Salvador, *Valencia*—Producer.
Skeins of silk, of 4, 5, 6, 9, and 14 cocoons.

199 ———, D., *Murcia.*
Silk-worm gut, for fishing.
Silk-worm gut, first and second qualities.

200 Almansa, D. Damian, *Murcia.*
Silk.

201 Cruz (D. J. de la), *Santa Cruz de Teneriffe.*
Silk. Cochineal.

[The Nepaul cultivation of the cochineal insect has been extensively diffused in Spain of late years. It had long been assumed, and experience has since ascertained, that the sandy and almost barren regions which skirt some parts of the Mediterranean coasts of Spain would be admirably adapted for this object. Subsequent experiments and results have been conducted in many different localities. At the Exhibition there will be found specimens of this product from Valencia, from Alicant, from Malaga, and from the Island of Teneriffe, and Canaries.]

202 Montfort, F., *Torrente del Cinca*—Producer.
1 Four skeins of silk produced in the district.
2 Silk from the worms, called *trevoltinos.*
3 Silk from the worms called *de Raiko.*
4 Silk from the worms called *de Turquia.*

203 ———, D., *Murcia.*
Skeins of spun silk, of the kinds called *candongo, medio conchal,* and *conchal.*
Warp of double-spun silk (called *capillejo*).
Skein of spun silk, á la Piedmont.
Another skein, round.

204 Margarit (D. José), *Barcelona*—Manufacturer.
Spun silk.

205 Garcia (D. José), *Murcia*—Manufacturer.
Specimens of spun silk worked on the Arabian system.

206 Ferrer & Co., *Roda, Barcelona*—Manufacturers.
Line flax and silk thread.

207 Rey & Co., *Talavera*—Manufacturers.
Spun silk.

208 Monfort (D. Francisco), *Torrento del Cinca, Huesca*—Manufacturer.
Silk thread.

209 Board of Agriculture, *Valencia*—Manufacturers.
Spun silk.

210 Trenor (D. Tomas), *Valencia*—Manufacturer.
Specimens of spun silk.

211 Reynoso (D. Miguel), *Valladolid*—Manufacturer.
Spun silk.

212 Giner (D. Joaquin), *Villa Real, Castellon*—Manufacturer.
Specimens of spun silk.

213 Alcalá (the Widow), & Son, *Talavera*—Manufacturers.
1 Silk thread. 2 Silk stuffs.

214 Orduna, D. Vicente, *Valencia*—Manufacturer.
Samples of silk stuffs viz.:—
Various colours, for draperies.
Brocatel, superior double shot.
Dress pieces of Chinese and damasked gros.
Brocatel, single shot.
Velvet of various colours.
Waistcoats of figured velvet, of different colours.
Damasks—velvets, square pattern.

215 Dotres, Gaspar, & Co., *Valencia*—Manufacturers.
Samples of spun silk, viz.:—
White silk, from four, six, and seven cocoons.
Yellow silk, from five, seven, and eight cocoons.

[The collection of the raw or reeled silks of Spain merits the attention of manufacturers and merchants, as being of excellent quality. The common kinds, reeled after the old manner, are employed in finishing up the silk stuffs of Malaga, Valencia, and Talavera, so celebrated for the solidity of their textures and the permanency of their colours. The new steam processes are everywhere extending themselves; the greatest attention is paid to the worms and to their nurture; to the introduction of precocious varieties; to different collections; to the reeling by four and five cocoons; all these are innovations generally adopted now, and to which agricultural associations and two enlightened and zealous followers among the silk growers, have given a vast development of late years. Owing to these exertions, the silk-works of Catalonia, Valencia, and Murcia have been able, of late years, to introduce great improvements into their textures; employing, at the same time, the native silk of the country — a circumstance this, moreover, which allows them to sell their products at very moderate prices. The value of the silks in the Exhibition varies with their quality. There are some from Valencia, reeled from 4, 5, 6, and 7 cocoons, valued at from 64 to 70 reals per lb.; or from 26 to 38 francs (1*l.* 1*s.* 8*d.* to 1*l.* 11*s.* 8*d.*) the kilogramme; and others, between 80 and 86 reals, or 40 and 42 francs.

The manufactory of the present exhibitors is very considerable; it employs a large steam-engine, and produces, in ten months of the year, 18,000 lbs. of silk, or very nearly 9,000 kilogrammes. It gives employment to 170 women and young girls, and uses no other silk than that of the country. M. Montfort, a zealous and active producer, to whom this branch of industry is much indebted, has forwarded from Torrente del Cinca, where he has established his "magnaneries," some magnificent skeins of silk obtained from the Trivoltin worm, and of silk, from worms of the Kaiko race, and of Turkey. Alicant, Palentia, Barcelona, Castillon, Valladolid, exhibit also some rich specimens. The province of Murcia, which still retains the ancient processes, has sent some specimens obtained by reeling after the Arab manner, of three varieties. There are other specimens of silks, obtained by the same processes, and of a series spun after the Piedmontese manner: the collection contains some samples from the Canary Island, where this sort of trade is progressing very advantageously. These silks are the produce of the Trivoltin, crossed with the annual worm, and nourished upon the leaves of the *Mora multicaulis.*]

216 Roig (D. Jose), *Barcelona.*
Specimen of silk stuff, called " Christus."

217 Amigo y Saury (D. Raymundo), *Barcelona*—Manufacturer.
Pieces of silk stuff for umbrellas.

218 Castillo, D. M., *Seville*—Manufacturer.
Specimens of silk stuff.

219 Manufacturing Company of the Guilds, *Talavera and Ezcaray*—Manufacturers.
Silk and gold stuffs.

220 Calderon (D. Juan Manuel), *Granada*—Manufacturer.
Specimens of spun silk.

221 Fiter, J., *Barcelona*, Manufacturer.
Blonds; large kerchief of black blonde with flowers; mantilla of black blonde. Black and white blonde veils.

222 Fiter, J., *Barcelona.*
Dress and shawl of black blonde, with coloured flowers.

223 Margarit and Ena, *Barcelona*—Manufacturers.
Scarf of black lace.
Dress, composed of skirt, body, sleeves, &c.
Veil of white blonde.
Mantilla of black blonde.
Mantilla of satin with black blonde.

224 Municio (D. Vicente), *Casla, Segovia.*
Specimens of wool.

225 Montero (D. Sebastian), *Seville.*
Samples of fine wool, unwashed.

226 ———, D., *Huelva.*
Fine wool, from the flocks fed in the Sierra de Andevalo.

[It is much to be regretted that the collection of specimens of wools sent from Spain should not have been much more extensive; and, above all, that such a series should not have been arranged with a view of giving an accurate idea of our wools; a series at once topographical and industrial, which would have much facilitated the comparative study of such specimens with the beautiful and remarkable varieties that are obtained in other countries. But the collection is also deficient in specimens of the hair or pile of the goat, and more particularly of the goat of Thibet, which we continue to rear and tend with so much care in various localities. Spain might derive an immense profit from the adoption of improvements such as are demanded by the present condition of these branches of her national industry; but these improvements must be combined with a total agricultural revolution, which, in its turn, also, must mainly depend on a new system of development—uniform, wisely digested, and pushed forward with great energy and perseverance, in the labours required on her public works, on her roads, bridges, lines of communications, enclosures, and irrigations. Foreign capital might here find employment as varied as it would be lucrative. Spain might derive no inconsiderable advantage, moreover, from a trade in the skins of rabbits and hares, which are exceedingly plentiful throughout her territory. One exhibitor has sent some specimens perfectly smooth, and denuded of hair by a mechanical process.]

227 The Economical Society of Tudela, *Navarre.*
Specimens of wool (called *churra*).

228 Barrasa (D. Mariano), *Valladolid.*
1 White wool, washed. 2 The same, carded. 3 Brown wool, washed. 4 The same, combed.

[" Our Spanish wool," observes M. de Sagra, "enjoys great celebrity, although this requires, perhaps, to be maintained by the adoption of more rational principles in the rearing of the sheep, the separation of flocks, the choice and crossing of breeds, the system of folding, depasturing, removals, &c. Spain has possessed, for centuries past, the beautiful Merino breed, which requires.at this day the most special care in their treatment and management; for these animals, although they have lost nothing of their primitive vigour, seem to have gained little or nothing as to any improvement in the quality of their fleeces. A few zealous flock-masters, who are anxious to meet this deficiency, have forwarded to the Great Exhibition some samples of beautiful wools; but the series is neither so extensive nor so rich as might have been contributed. Long wools, particularly, which are of more or less value than some others of Spain, and appropriated for combing, are rare in this collection. There are some wools of these kinds grown, however, in Egea, province of Saragossa, whereof the sashes and cloaks (*ceintures et couvertures*) of that country are made. The qualities of the Segovia are most renowned. Some of the wool of Casla, and some of the Merino fleeces, with fine and short wool, are extremely valuable. These beautiful specimens are from the flocks of an exhibitor, who has assiduously devoted himself to the improvement of the merino races in Spain. He was the first to introduce, in that country, the custom of housing the sheep from the month of December to the beginning of June. The experiment appears to have been completely successful. The wool of the animals which are treated after this manner becomes much more fine; and the difference renders itself perceptible in those parts of the sheep which have not been covered with this natural clothing. M. Hernandez has forwarded to the Exhibition various fleeces of his sheep, some of which had been exposed to the direct action of all the atmospheric agencies, and the others protected under sheds, &c. The difference between the qualities of the respective wools is very great."

Conjointly with these improvements due to the enlightened zeal of individuals, we ought to mention the complete reform of our ancient legislation, which formerly accorded to the proprietors of herds and flocks monstrous privileges, opposed to agricultural progress and to the perfection of races. The laws of La Masta are abolished, and the fiscal regulations established in their stead are favourable to the introduction of foreign races, which are much required by the Spanish breeders for the purpose of crossing their own stocks.]

229 ———. D., *Saragossa.*
Black and white wool.
Black and white worsted, from Ejea.

230 HERNANDEZ, D. JUSTO, *Madrid*—Producer.
Black and white wool from Salamanca.

231 DELGADO (D. DOMINGO), *Saragossa.*
Hare and rabbit hair.

231A THE CORPORATION OF LUCENA, *Castellon*—Manufacturers.
A fulled cloth mantle.

232 THE CORPORATION OF MORELLA—Manufacturers.
Saddle-bags of canvas.
Travelling mantle.
Two sashes.

233 The ALCALDE of *Santa Maria de Nieva, Segovia*—Manufacturer.

Coarse woollen cloth for winter clothing, of first and second quality.

234 The ECONOMICAL SOCIETY, *Manillas, Philippine Islands.*
Piece of 1½ yard broad "yloylo" stuff.
Various pieces, for a blouse.
Piece of "jusi," and a shawl of "jusi;" both worked.
These samples are products of the Bisayas Islands.

235 THE ECONOMICAL SOCIETY, *Manillas, Island of Luzon.*

An apron; four handkerchiefs; three camisets; four collars and cuffs; and two collars: embroidered in pine. One of the handkerchiefs remains on the frame in which it was embroidered. In a parcel, are the instruments used for cutting the filaments, &c.

Six dresses and six shawls, with checks and stripes: woven with "jusi."

Six cigar-cases, of different quality; crown of a hat; cluster of "bejuco;" seven small bunches of the filaments of bejuco.

Soap made from pure palm-oil.

236 SMITH, CONSTABLE, & Co., *Liverpool*, per HAMMOND, W. P., & Co., *London.*

1 Embroidered Piña muslin dress from the Phillippine Islands, manufactured from the fibre of the pine-apple, and embroidered by the Signora Márguerita of Manilla.
2 Embroidered piña muslin handkerchiefs.
3 Pieces of striped jusi dresses.

237 GILART, ROSA DA., *Madrid*—Designer and Manufacturer.

Shield of the royal arms of Spain, in silk, gold, and silver.

The baby-linen made for the late Prince of Asturias.

238 ——, Mrs. G. M., *Madrid.*
Embroidered shirt.

239 BESCANSA (FERMIN), *Corunna.*
Cream of tartar. Bitartrate of potash.

240 ZABALA (PEDRO VICENTE), *Vitoria*—Producer.
Schwreinford green. All the materials employed are of Spanish produce. Extract of aconite.

241 FLORES, CALDERON, & Co., *Burgos.*
Resins and spirits of turpentine.

[Resins, and the essence of turpentine, have been sent from the province of Burgos only, and the specimen of resinous gum in the Spanish collection has been furnished by the plum and almond-trees of the province of Huesca.]

242 SANTO, Dr. D. AMBROSIO C., *Matanzas, Cuba.*
Chemical products.

242A CANALES (D. JOAQUIN), *Malaga.*
Essence of lemons, made by the exhibitor.

243 LEON Y RICO (D. EDUARDO DE), *Madrid*—Producer.
Hard soap, made without the agency of heat.

244 GIRÓ (D. JUAN), *Malaga*—Producer.
Veined soap.

245 BERT (D. JUAN JULIAN), *Madrid*—Manufacturer.
Various acids. Stearine candles. Soaps.

246 BERT (D. JUAN), Director of the Light Manufactory—*Madrid.*

Stearine star-lights. Wax-lights and candles, of vegetable wax, or stearine prepared from oils. White oil-soap. Yellow oleine-soap.

[Stearine candles are made from the mixture of stearic and margaric acids, prepared from animal fats, which consist chiefly of stearine, margarine, and oleine, that is, compounds of the fatty acids (stearic, margaric, and oleic), and the sweet principle of oils (glycerine, sugar of oils). To obtain the fatty acids, the fat is boiled with lime, which combines with them, forming stearate, margarate, and oleate of lime; the glycerine remaining dissolved by the water is removed by washing; the lime-soap is then decomposed by hot dilute sulphuric acid, which combines with the lime, and liberates the fatty acids, which rise to the top. Oleic acid, being a fluid, is removed by pressure. Oleine soap is oleate of soda.—W. D. L. R.]

247 GOLFERICHS (PEDRO M.), & CUGAT, J. P., *Barcelona.*

Liquid gas, free from smell, and from smoke during combustion.

248 THE CENTRAL FACTORY OF TOBACCO, *Philippine Islands.*

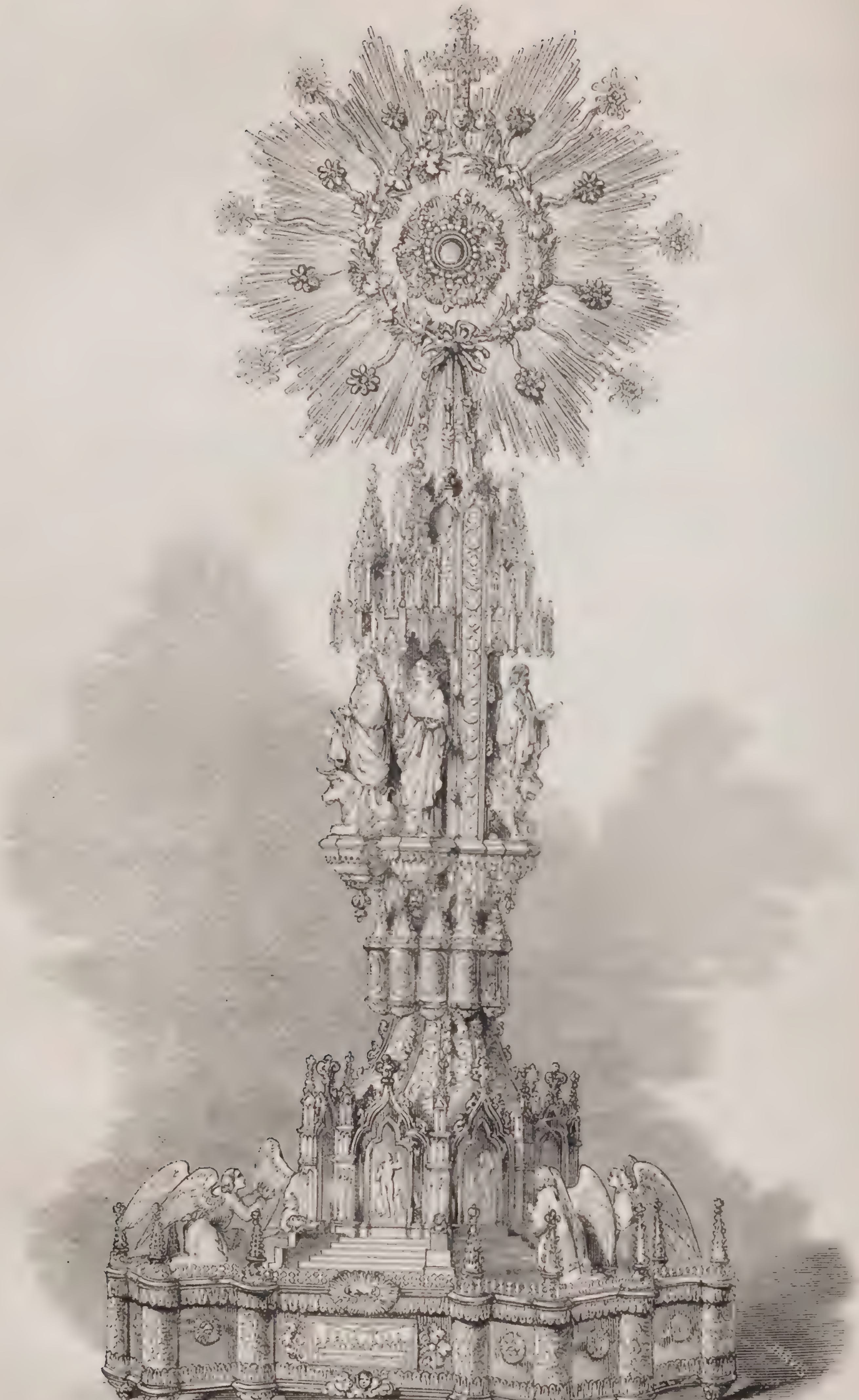
Small box, containing ten small packets of cigarettes of the different kinds manufactured in the above factory of Manilla.

Eight small boxes, containing cigars of the various forms and sizes manufactured in the same factory, with picked Cagayan leaf.

249 JAREN, D. JUAN A., *Havannah*—Inventor.
Various assortment of trusses.

249A VIGNAUX (D. LUIS JOSÉ), *Barcelona*—Manufacturer.

Curried skins, for bootmakers:—
1 Two calf-skins, tanned and curried; weight 20 lbs. of 12 oz. per dozen skins.
2 Two calf-skins, tanned and curried, same weight.
3 Two calf-skins, prepared for enamelling.
4 Two calf-skins, black-waxed on the under side, about 20 lbs. of 12 oz. per dozen.
5 Two calf-skins, of greater weight.
6 Pair of boot-legs, with their backs; first class.
7 Pair of boot-legs, middling quality.
8 Pair of boot-legs, for half-boots.
9 Pair of boot-legs, and upper leathers for mounting the same.
10 Pair of boot-legs, middling quality.



203. TABERNACLE. SILVER GILT, INLAID WITH PRECIOUS STONES. SPAIN.

Enamelled leathers, for shoes:—

11 Two enamelled calf-skins, for boots.
12 Two enamelled calf-skins, first class.
13 Two enamelled calf-skins, for ladies' shoes, prepared from the upper side.
14 Two enamelled calf-skins, with the upper side.
15 Two goat-skins, enamelled on the upper side, and grained.

Glazed skins, for hatters:—

16 Twelve prepared sheep-skins, for hat-linings; white, lily, violet, flesh, sky-blue, sea-green, clear apple-green, chocolate, coffee, grey, yellow, and straw colour.
17 Two prepared sheep-skins, black enamelled.
18 Twelve hat-linings, glazed, of various colours and white.
19 Two hat-linings, black enamelled.
20 Coachman's hat, black glazed, large size.
21 Coachman's hat, middling quality.
22 Sedman's hat, large.
23 Sedman's hat, small.
24 Twelve sorted cap-fronts, of different kinds.
25 Three flaps for cap-fronts, of different kinds.

For saddlers and coach and harness makers:—

26 Large-sized ox-hide, grain-glazed, for coach.
27 Middling-sized ox-hide.
28 Superior calf-hide.
29 Superior calf-hide, glazed on under side.
30 Superior calf-hide, glazed on upper side, for collars and other articles of harness.
31 Cow-hide, black glazed, thick.
32 Cow-hide, black glazed, thin.
33 Cow-hide, strong, white.
34 Cow-hide, thin, white.
35 Piece of hide, black glazed on both sides.
36 Piece of hide, grey on one side and black on the other.
37 Five sheep-skins, strong and of large size, grained, for coach-boxes; yellow, grey, purple, lily, and blue, glazed.
38 Sheep-skin, crimson.
39 Sheep-skin, black.
40 Sheep-skin, glazed on under side, and strong.
41 Goat-skin, black-grained upper side.
42 Two imperiales, or head-pieces, for cavalry and artillery helmets.
43 One imperiale, for infantry.
44 Two vizors, for cavalry helmets.
45 Two vizors, for infantry helmets.
46 Pair of pistol-holsters.
47 Fine black-enamelled goat-skin, for trimmings.

[The skins of Spain are of a remarkable quality, especially those of goats and lambs. This branch of industry has assumed a much more extensive development with the glove manufacture, which now successfully contends with the French article.

With regard to skins and hides for the purposes of boot and shoe-making, saddlery, &c., a manufacturer of Barcelona has provided an interesting collection of excellent qualities, and at moderate prices. In the present series may readily be recognized the progress which Spain has made in leather dressing within these last few years. The calf skins that are white tawed (or tanned), are so admirably dressed that their average weight does not exceed 20 ounces. The same manufacturer exhibits tilts or tarpaulings, perfectly tanned and varnished, and of great suppleness; sheep-skins (*amincias*), for the lining of hats; an assortment of skins for shakos, glazed skins, &c.]

249b Roig, D. Salvador, *Barcelona*—Manufacturer.

Prepared fine skins, of various colours and gilt.

250 Society of Manilla.

The leaf of cagayan is the only one manufactured for exportation.

251 Partagas & Co., *Havannah.*

Case of cigars, imported by A. G. Wiltshire, 2 Lime Street Square, agent to the exhibitor.

253 Deu (D. Gregorio), *Barcelona*—Manufacturer.

Cards for weaving.

253a Sastre, D. Casiano, *Lorca, Murcia.*

Woollen cloth.

253b Mendez, D. J. J., *Lorca, Murcia.*

Woollen cloth.

253c Cruz Arcas, D. N., *Lorca, Murcia.*

Woollen cloth.

253d Moreno Brothers, *Antequera, Malaga*—Manufacturers.

Baizes.

253e Trueba y Campo, *Santander*—Manufacturers.

Woollen cloth, from the factory at Renedo.

254 Aleman (D. Pablo), *Ezcaray*—Manufacturer.

Cards for weaving.

255 Sastachs, J., *Barcelona*—Manufacturer.

Wire cloth. Specimens of the various kinds manufactured by the exhibitor. Pair of paper moulds.

256 Belmonte (D. Rafael), *Navas Frias*—Manufacturer.

Two felt hats.

256a Ibarra (D. José), *Placencia*—Manufacturer.

Various kinds of files.

257 Callejo (D. José), *Madrid*—Manufacturer.

Locksmith's work made for the new building destined for the Congress of Deputies.

258 Vilardet & Callejas, *Valladolid*—Manufacturers.

Kid and lambskin gloves.

258a Baeches (D. Antonio), *Madrid*—Manufacturer.

Stirrups.

259 Sanchez Pescador (D. José), & Miguel (D. Tomas), *Madrid*—Manufacturers.

Bedstead of cast steel, with bronze ornaments, chased and gilt.

260 Miguel (D. Julian de), *Madrid*—Manufacturer.

Iron bedstead, with ornaments of gilt brass.
Iron bedstead, with inlaid ornaments.
Bed-room stand, of iron, with inlaid ornaments.

261 Moratilla (D. Francisco), *Madrid.*

Tabernacle, silver-gilt, inlaid with precious stones, weighing 2 quintals; made for the cathedral at Arequipa. This tabernacle is represented in the Plate 203.

262 Royal Ordnance Office, *Oñate*—Manufacturers.

1 Howitzer of wrought-iron, 16-inch calibre, made at Oñate by the Carlists, during the last civil war in the Peninsula.
2 Mortar of wrought-iron, 9-inch calibre.

263 Royal Cannon Foundry, *Seville.*

A long howitzer, 9-inch calibre.

264 Zuloaga (D. Eusebio), *Madrid*—Manufacturer.

Case to contain a title nobility of Castille, of wrought-iron, with reliefs, incrustations, and Damascus-work of gold and silver.

264a Zuluaga (D. Eusebio), *Eibar, Guipuzcoa*—Manufacturer.

Two pairs of pistols and two hunting knives, with their appurtenances, made of forged iron, highly ornamented and inlaid.

Cavalry sword, with figures, arabesques, &c., and damascened with gold and silver.

Two-barrelled gun, mounted in the English fashion.

Single-barrelled gun, mounted in the Spanish fashion.

A group of these objects is represented in the plate.

265 The Royal Ordnance, *Placentia*.

An infantry percussion musket and bayonet.

266 The Royal Ordnance, *Toledo*.

Nine sword and sabre blades—1st. For officers of artillery, inlaid, engraved, and gilt; 2nd. and 3rd. For officers of artillery, enamelled and damasked; 4th. Officer's sword-blade, engraved; 5th. Infantry officer's sword-blade; 6th. Cavalry officer's sword-blade, engraved, gilt, and enamelled, in the form of a serpent; 7th. An ancient cavalry sword-blade, engraved, enamelled, and coloured; 8th. A cavalry officer's sabre-blade, engraved; 9th. An infantry officer's sword-blade, with silver hilt, in form of a serpent's head.

Ancient halberd, engraved and gilt.

Dagger, enamelled and gilt, with sheath engraved and gilt.

Silver case, with sheath, in form of a serpent.

A group of these objects is shown in the plate.

[The trade of forging iron is of great antiquity in Spain, but the method of English casting (*la fonte Anglaise*) is very modern, dating only from 1832. Since that period many of these casting furnaces have been established; one at Barcelona, one at Sabadell, one at Tarresa, one at Matara, one at St. Felio, one at Ignalada, one at Vich, one at Rens, one at Figueras, three at Madrid, two at Valencia, one at Seville, one at Valladolid, one at La Corogna, one at Bilbao, one at Tolosa, one in Trubia. There are also four working factories and casting furnaces at Barcelona, and four others situated respectively at Maurreza, Madrid, Malaga, and Saragossa; besides all these, there are no less than eighteen iron-works and factories at Barcelona alone; at Sabadell, two; and at Tarraza, Villasar, Metaro, and Reus, one each. This enumeration will contrast, significantly, with the small number of metallurgical products sent to the Exhibition from Spain. Some judgment may be formed of the state of our manufactures of arms from the beautiful piece of bronze ordnance, weighing upwards of 3,000 kilogrammes, from the Royal Manufacture of Seville. The manufactory of Toledo supplies sword-blades, sabres, and knives of excellent quality. Some of these can be inserted into their scabbards in the twisted form of a snake. Two factories, the one at Placencia, the other at Elba, have furnished sets of files from 14 to 18 inches. Barcelona sends combs for tulle, silk, velvet, &c. From the same city, and from Escaray, cards for wool and cotton combing, made according to the processes which have been introduced at Liege. From Barcelona, also, some metallic gauzes; but none from Madrid. This article is applicable to the preparation of paper, whether made endless (or cylinder drawn) or by hand. One lockmaker only, M. Callejo, has transmitted specimens of his work, but from these an advantageous estimate may be formed of the condition of this branch of industry in Spain.]

267 Ysasi (D. Manuel de), *Ordnance of Toledo*.

Sword of extraordinary temper and flexibility, with metallic scabbard, in the form of a serpent.

This sword is represented in the plate.

[It is related by the Greeks of the Lower Empire that the temper for the "admirable Persian sabre" was invented by the Indians, from whom the Persians borrowed it. Damascus became the chief seat of this industry, and, doubtless, it was through the Arabs that the knowledge of processes of Damascus travelled into Spain, and materially contributed to the success which, in this manufacture, her artisans for many centuries enjoyed. This Indian invention appears to have been the substitution of oil for water in the process of tempering. Yet Martial often speaks of the celebrity of his compatriot Aragonese in this art, and Pliny reports the like reputation of the inhabitants of Bilbilis and of Turiasso.—R. H.]

268 Ibarzabal, D. Gabriel, *Guipuzcoa*—Manufacturer.

Two fowling-pieces.

269 Aretio, D. Candido, *Eibar, Guipuzcoa*—Manufacturer.

Two fowling-pieces.

270 Medina (D. Miguel), *Madrid*.

Secretaire, with incrustation work.

This secretaire is represented in the adjoining Plate 251.

270a Garate, D. Manuel de, *Eibar, Guipuzcoa*—Manufacturer.

A six-barrelled pistol.

271 Oppelt (D. Emilio), *Malaga*—Manufacturer.

Optical instruments.

271a Perez, *Barcelona*—Inventors, Designers, and Manufacturers.

An octagonal table of inlaid wood; the top consists of various designs, with the arms of Spain and England. It contains 3,000,000 pieces, the arms of England alone, in a space of 3 inches by 2, consisting of 53,000.

This branch of industry has been introduced by the exhibitors.

This table is represented in the Plate 73.

272 Gallegos (D. José), *Malaga*—Inventor and Manufacturer.

Guitar-harp: a newly-invented instrument, which comprises the harp, guitar, and violincello.

This instrument is represented in the Plate 251.

272a Settier, D. Baltasar, *Valencia*—Manufacturer.

Thirty-three samples of straw-hats.

273 Cort y Marti (D. Pedro), *Madrid*—Inventor and Manufacturer.

Orthopedical apparatus. Lasts.

274 Leon (D. José), *Madrid*—Manufacturer.

Artificial teeth.

274a Sena Sorni (D. Francisco de), *Valencia*—Manufacturer.

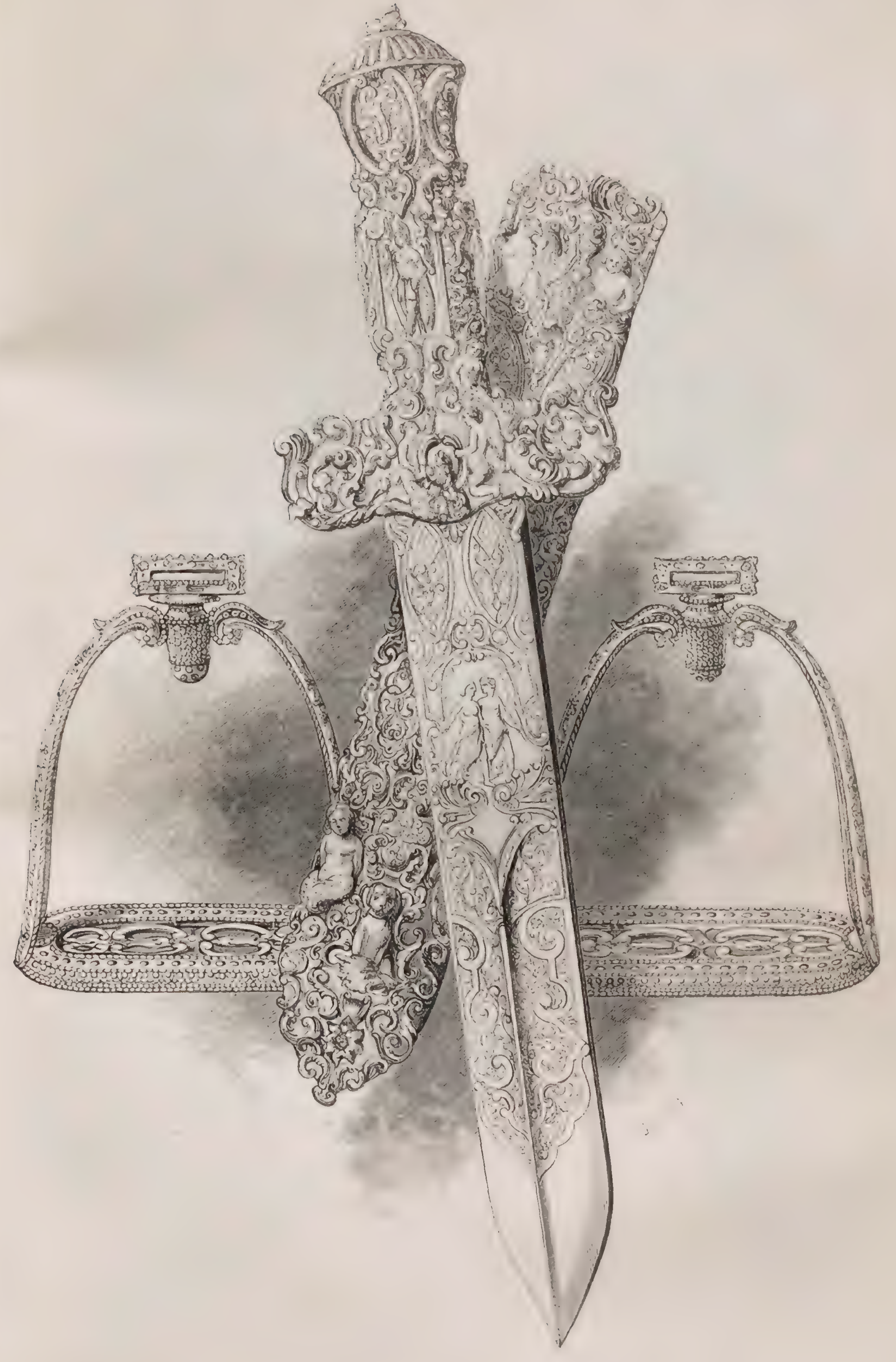
Ribbons for decorations and fringes.

275 Yraburu (D. Gaspar), *Madrid*—Manufacturer.

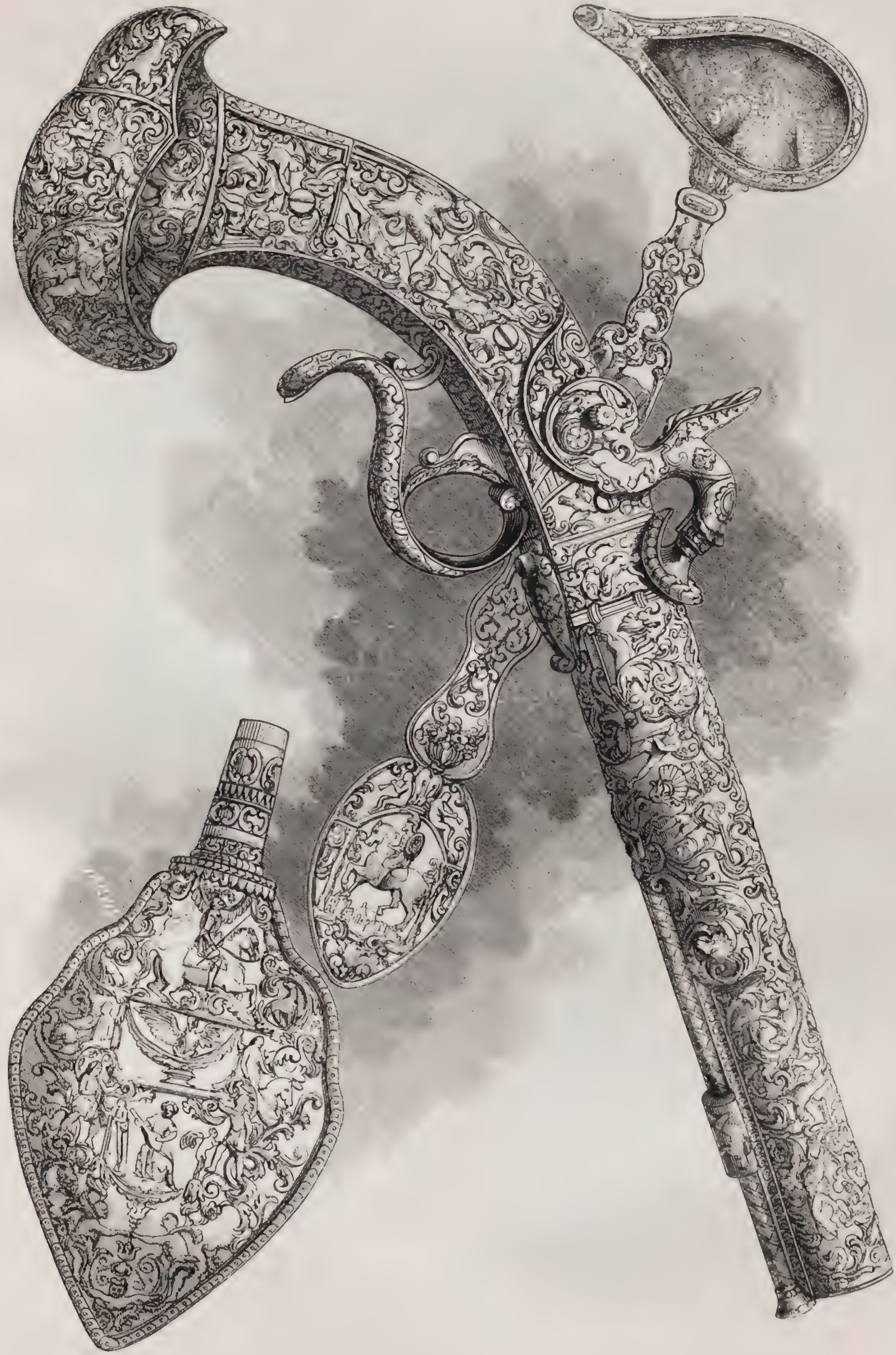
Various decorations.

275a The Economical Society, *Manilla* (*Island of Luzon*).

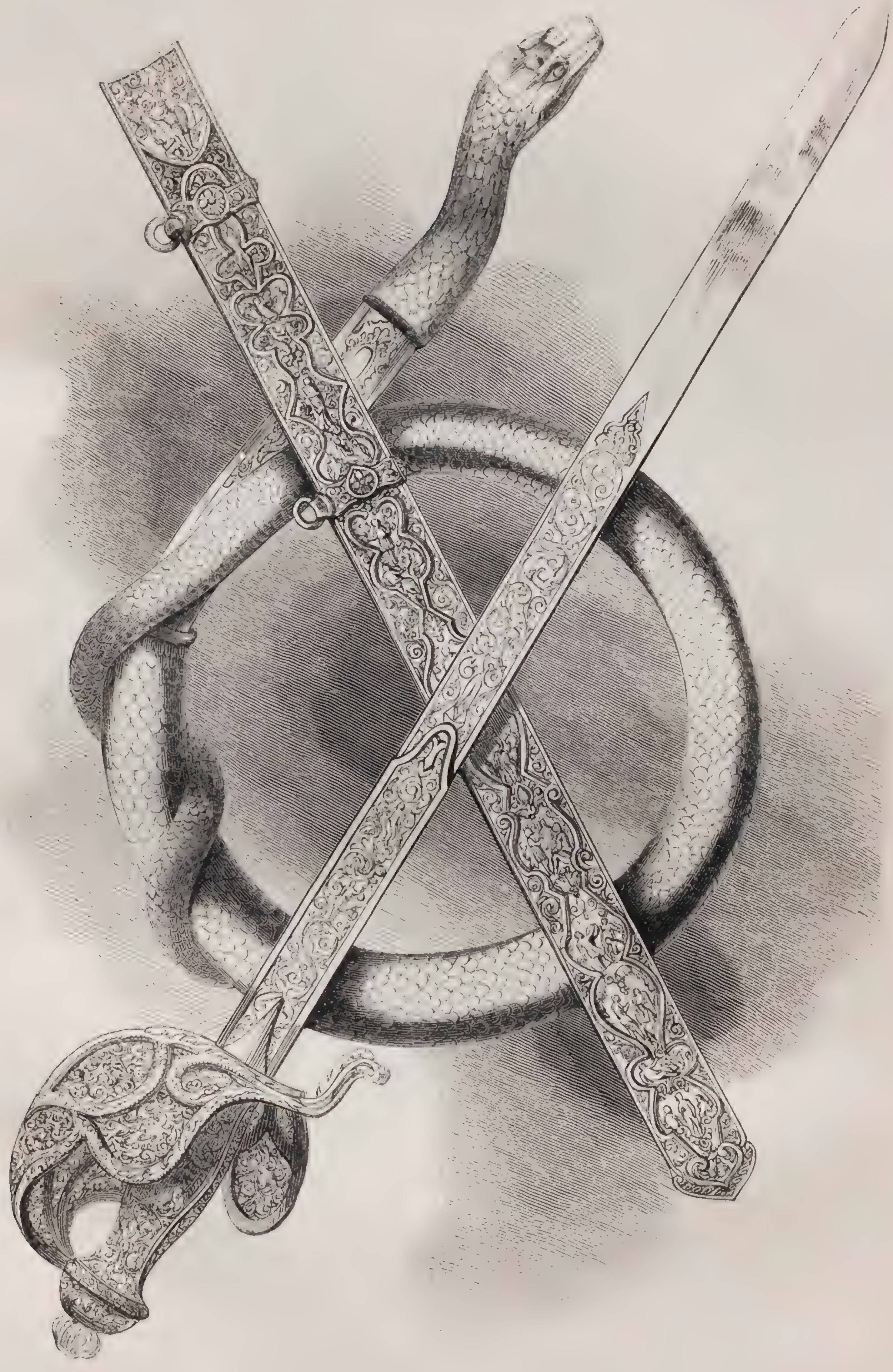
Soap made from pure palm oil.



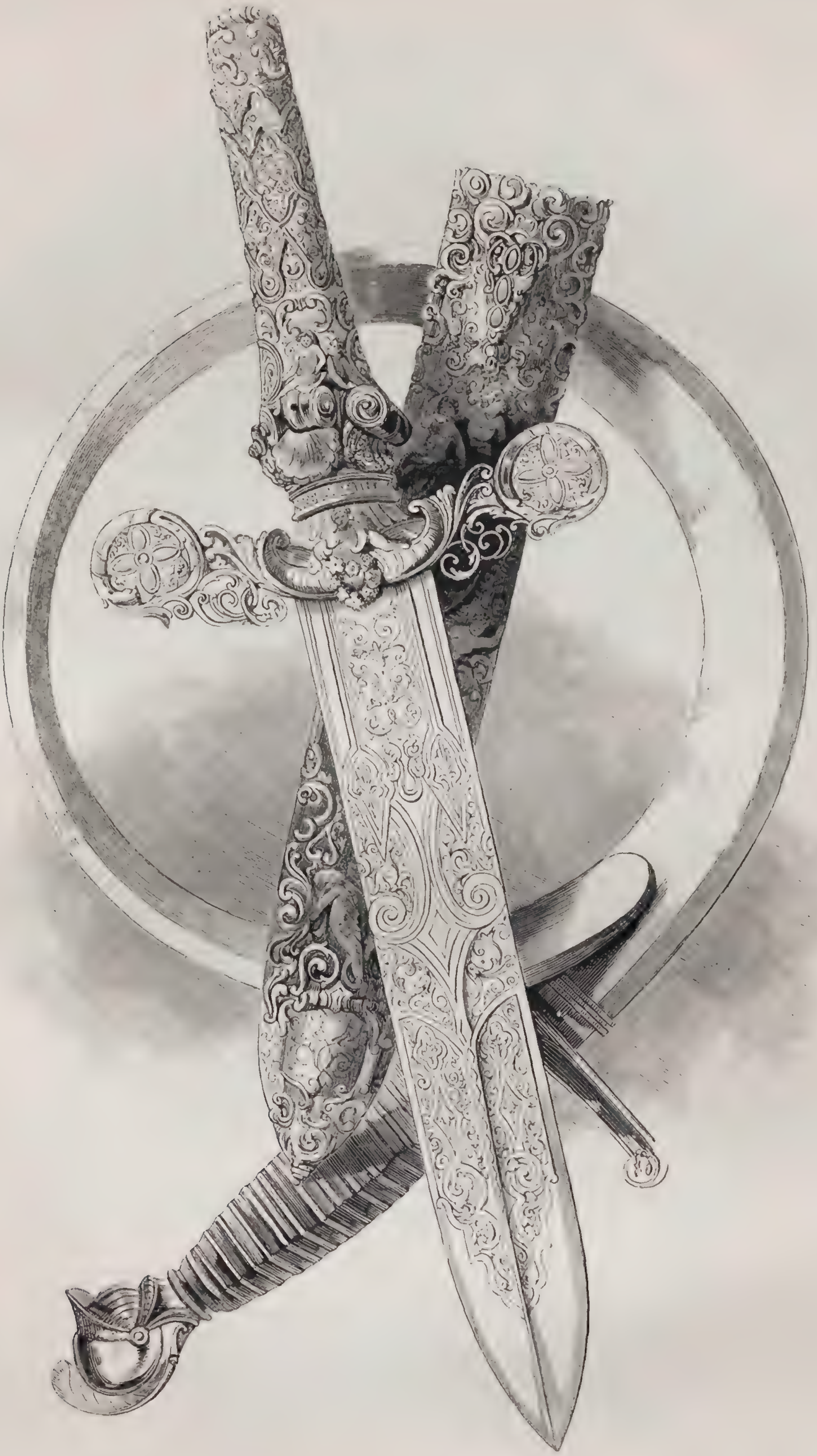
204. AN ORNAMENTAL DAGGER AND CASE, AND STIRRUPS. SPAIN.



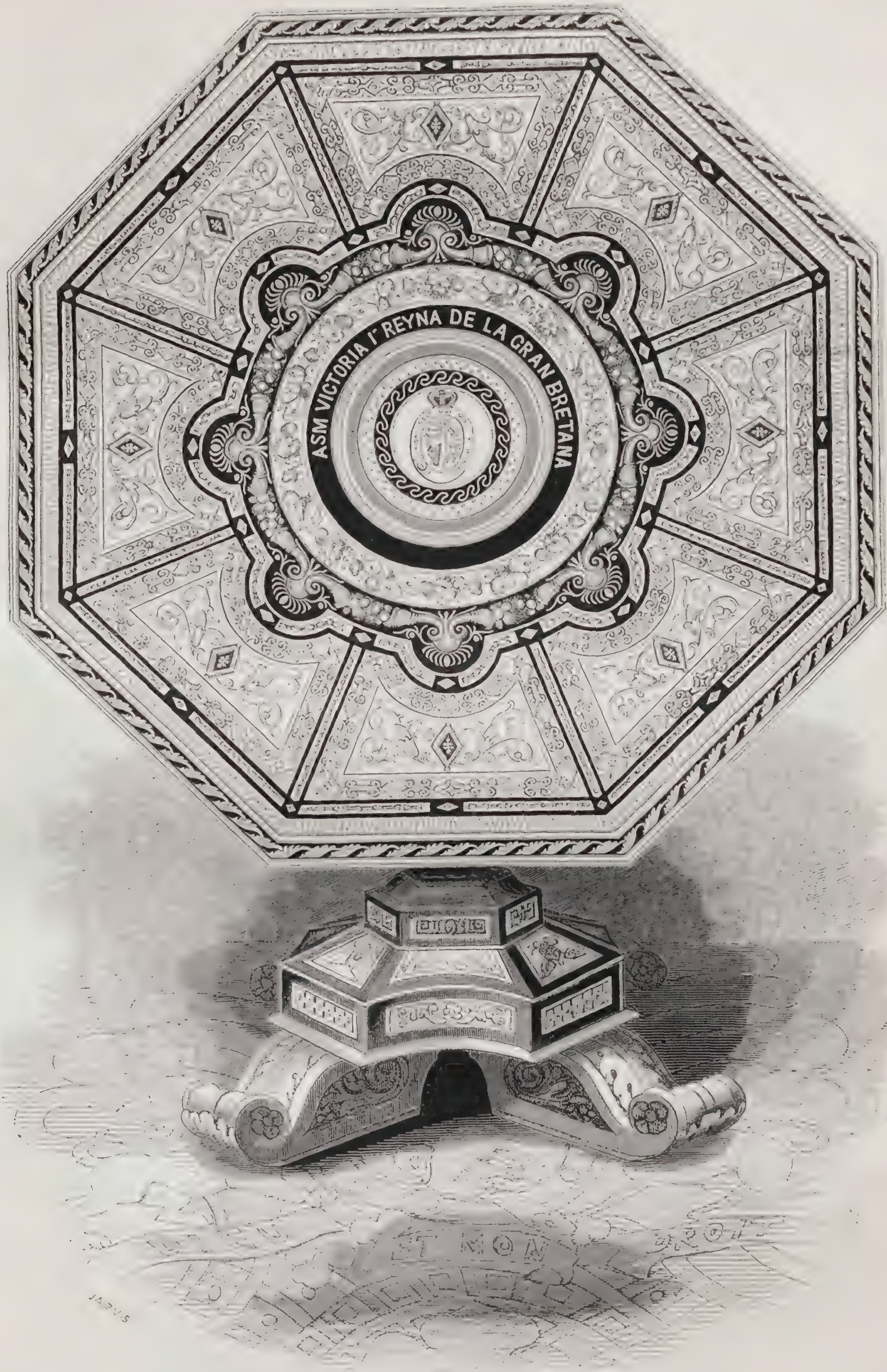
130. SPECIMENS OF DECORATED AND INLAID SPANISH ARMS.



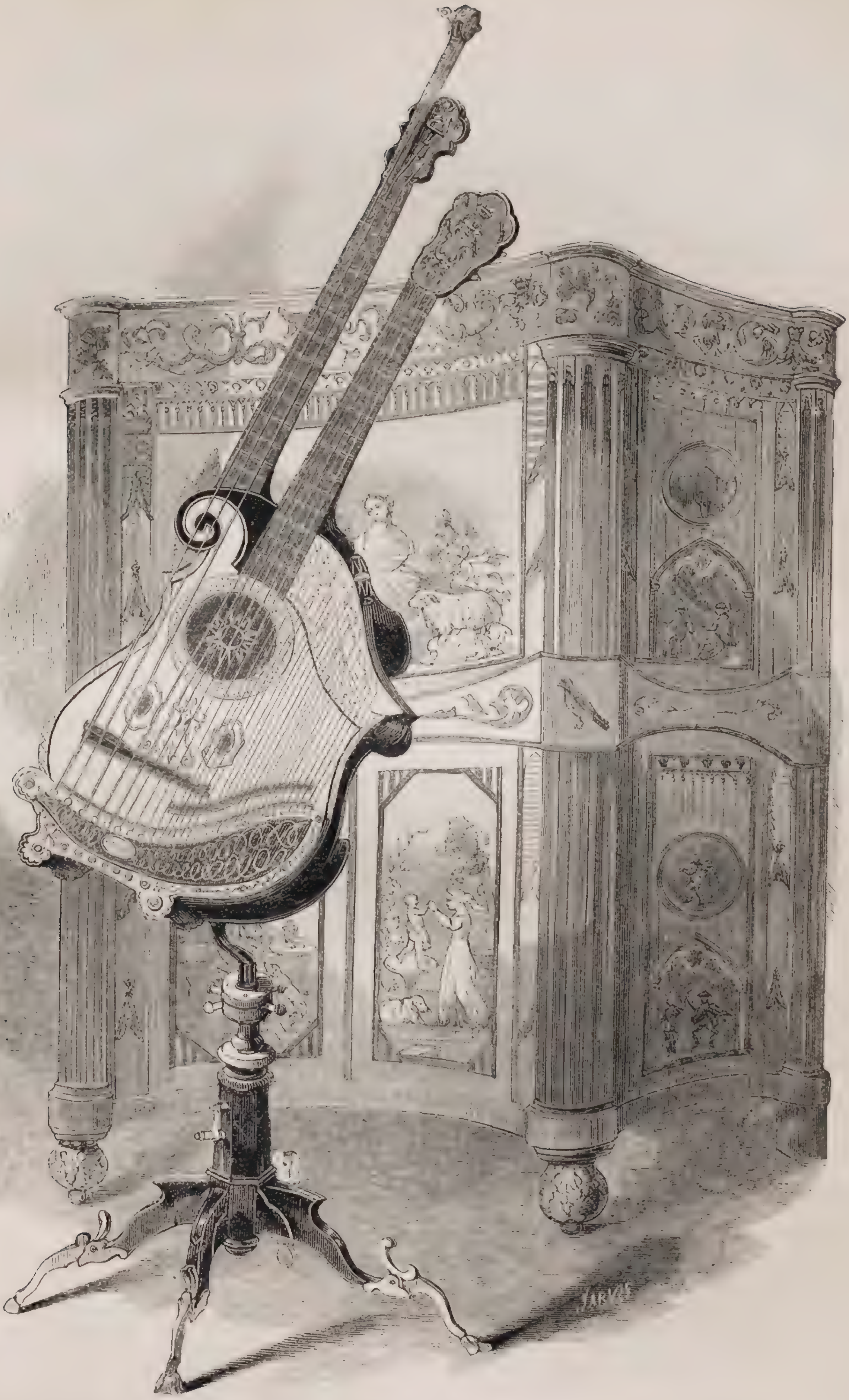
126. A STRAIGHT TOLEDO SWORD, AND A SWORD OF EXTRAORDINARY TEMPER AND FLEXIBILITY, WITH A METALLIC SCABBARD IN THE FORM OF A SERPENT. M. DE YSASI. TOLEDO.



127. AN ENAMELLED AND GILT DAGGER AND CASE, AND SERPENT FORM SWORD, FROM THE ROYAL ORDNANCE, TOLEDO.


ASM VICTORIA I' REYNA DE LA GRAN BRETANA

73. ELABORATELY INLAID TABLE. SPAIN.



251. HARP-GUITAR AND STAND. M. T. GALLEGOS, SPAIN. INLAID SECRETAIRE. M. MEDINA, SPAIN.

276 Mir Brothers, *Barcelona*—Manufacturers.
Lace trimmings.

280 Royal Ordnance, *Trubia*—Manufacturers.
A bust, in bronze, of Her Majesty, the Queen of Spain.
A bust, in iron, of His Majesty the King of Spain, as taken from the mould.

281 Nauri (Juan Bautista), *Madrid*—Producer.
1 Group of gilt bronze figures, representing an incident at a bull-fight.
2 Bronze group, representing the same.
3 Bronze figure, representing a Picador.

281a Gutierrez de Leon, D. Rafael, *Malaga*—Designer and Producer.
Three terra-cotta figures.

282 Péna (D. Antonio), *Madrid.*
Terra-cotta figure.

283 Contreras (Rafael), *Aranjuez, Madrid.*
Arabesques, details from the Alhambra.

284 Ysasi, D. M. de, *Chiclana.*
Alcaraza, or porous water-bottle.

285 Jimenez (D. Manuel), *Madrid.*
Two wood mosaic pictures.

286 Pascual y Abad (D. Antonio), *Valencia*—Producer.
Paintings for fans.

287 Mitjana (D. Rafael), *Malaga*—Producer.
Fans, and paintings for fans.

289 Mata Aguilera (D. Juan de), *Madrid.*
Model of the bull-fighting circus of Madrid (one-half of the interior), represented nearly full of spectators; with 4,000 wooden figures, exhibiting in the arena different incidents of a bull-fight. In the seats of the amphitheatre, in the foreground, are figures in the different provincial costumes of Spain; and outside are various sellers of fruits, fans, and other articles; with boys' games, visitors to the circus, &c.

290 Carborell, M., *Alcoy.*
Travelling wrapper, in the Jerezaro style, with wallet.

291 Portilla, —., *Seville.*
Samples of wheat and semouli.

292 Arrieda, —., *Habana.*
Samples of white sugar.

293 Bienaime, A., Sculptor, 22 *Newman Street.*
Marble group: Love Triumphant.

294 Portilla, —., *Seville.*
Wheat and semisole.

295 Arrieta, —., *Havana.*
Samples of white sugar.

300 Keene, William, 42 *Cornhill*—Proprietor.
Case containing geological specimens from the Western Pyrenees.

[The Western Pyrenees consist chiefly of cretaceous deposits, with a central range of crystalline and metamorphic rocks. The Bunter sandstein occurs at intervals, and towards Argelles the oolitic series is represented. The triassic rocks occupy the southern or Spanish, and the oolitic and cretaceous, the northern or French side of the central ridge.—D. T. A.]

SWEDEN & NORWAY

SOUTH AREAS, L. 69, 70; M. 69.

Commissioner in London, CHARLES TOTTIE, Esq., *Crosby Square.*

THE universal reputation of Sweden for its iron and steel, renders the specimens exhibited in support of its celebrity the more valuable and attractive. As many as thirty of the exhibitors of these countries have sent specimens of iron and steel, either in a raw or in a manufactured state. One of the causes of the superiority of the Swedish iron for conversion into steel appears to be this—that the ore employed is the magnetic iron ore. But an equally important cause unquestionably lies in the fact, that mineral fuel is not employed in the process of smelting, the fuel used being charcoal, or wood, or both. Carbon is thus supplied to the iron in a form much more pure, and possibly much more readily capable of entering into chemical combination than in its state as coke or coal. The production of iron being of great importance to the prosperity of the country, it has been the subject of various public enactments, and is carried on under the direct superintendence and sanction of a Central Board. Licences to manufacture certain quantities of iron annually are granted, and every furnace and iron forge pays an annual duty to the crown. The amount permitted to be manufactured is regulated according to the means of the iron master to obtain the requisite supply of charcoal without public detriment or inconvenience from its consumption. The annual amount of iron made in Sweden is about 90,000 tons, of which about 70,000 are exported. A good collection of ores from Christinehamn and Boforss is exhibited. It includes also specimens of steel and of toughened iron. Other exhibitors show specimens indicative of the extreme toughness and resistance to fracture communicated to their iron. There is also a large collection of cutlery. Of the textile manufactures, are exhibited specimens of flax, silk, and woollen fabrics and materials. Some models of flowers in wax are also interesting. Specimens of native silver from the mines at Kongsberg, in Norway, indicate the possession of an available source of this valuable metal. Chrome iron ores and the chemical product from them, bichromate of potash, are exhibited. Interest is also excited by some of the homely domestic productions of the Swedish and Norwegian peasantry, whose long winter nights give time for such occupation, and preclude out-of-door work for more than a few hours. The magnificent vase in the centre avenue, the large cannon, and the specimens of ornamental furniture, &c., recently arrived, must also attract much attention.—R. E.

1 LAGERHJELM, PETER, *Christinehamn and Boforss, Sweden*—Producer and Proprietor.

Specimens of steel-iron and tough-iron:—

Twenty specimens: including the rock in which the mine is situated; the leading stone; the mineral intermixed with the ores; the ores and the analysis of them, showing their constituent parts, as to quantity and quality; the pig iron; the scoria; the blooms and the bars.

The following is a detailed catalogue of the above specimens, with notes respecting the method of manufacturing; mineralogical formulæ of the scoria obtained from the high furnace, &c.:—

Swedish bar-iron from peroxide of iron, and from magnetic iron-stone. The ores occur in beds, situated in mica slate; the rock being gneiss.

1 Mica slate. In the mine called Herr Grufvan of Dalkarlsberget, is commonly found between this mica slate and the ore, a kind of,

2 Petrosilex. In some places there is a rock between the ore and the petrosilex, consisting of

3 Slaty mica and chlorite, in the Swedish called *sköl* (cleft).

4 Hornblende of the texture of actynolite (Jameson's system of mineralogy), in some places preventing the sköl from touching the ore. No. 4 occurs also disseminated, as kernels, glandules, kidneys, veins (Swedish körtlar), in the bed of ore.

5 The ore of Herr Grufvan, intermixed with the rock.

6 The ore as used in the high furnace. Magnetic ironstone, from Herr Grufvan of Dalkarlsberget.

Constituent Parts.		
Silica . . .	9·187	
Alumina . . .	1·142	
Lime . . .	0·323	
Manganese . .	2·564	
Protoxide of manganese	0·075	
Magnetic oxide of iron	86·512	con. 62·613 metal.
	100·103	

7 Petrosilex, from the mine Nya Flintan of Dalkarlsberget.

8 Mica and chlorite (Swedish *sköl)* from the mine Nya Flintan of Dalkarlsberget.

9 Ore and rock from Nya Flintan of Dalkarlsberget.

10 The ore as used in the high furnace. Magnetic iron-stone, from the mine Nya Flintan of Dalkarlsberget.

Constituent Parts.		
Silica . . .	9·043	
Alumina . . .	4·802	
Lime . . .	0·873	
Manganese . .	3·349	
Protoxide of manganese	0·218	
Magnetic oxide of iron	82·234	con. 59·516 metal.
	100·519	

This ore occurs in great abundance.

11 The ore as used, from the mine Lang Grufvan of Dalkarlsberget, being a peroxide of iron.

Constituent Parts.		
Silica . . .	8·380	
Alumina .	1·115	
Lime . . .	0·373	
Manganese . .	3·825	
Protoxide of manganese	0·104	
Peroxide of iron .	86.415	con. 60·49 metal.
	100·212	

The bed of this ore being newly found, the stock is unknown as to its extent.

12 The ore as used from the mine Mossaberget, being a peroxide of iron. The bed is of great extent.

Constituent Parts.		
Silica . . .	25·905	
Alumina . . .	1·888	
Lime . . .	0·442	
Manganese . .	1·154	
Protoxide of manganese	0·032	
Peroxide of iron .	71·358	con. 49·96 metal.
	100·779	

13 Pig-iron :—

From the ores, No. 6 and No. 10 .	83·0	
From the ore, No. 12	17·0	
		100·0
Limestone, not quite free from petrosilex		7·8
Protoxide of manganese . .		1·9

In the roasting furnace, small bits of ore from the mines of Persberg (called *Waskmalm*) are used, to direct the heat.

14 Scoria, belonging to the pig of No. 13. According to the constituent parts of the substances put in the high furnace the formulæ of this scoria ought to be—

$$\left.\begin{matrix}C\\ Mn\end{matrix}\right\}S + Al\,S \text{ and } CS^{2} + Mg\,S^{2}.$$

15 Pig-iron from :—

Magnetic ironstone, of No. 6 and No 10	47·1	
Peroxide of iron of No. 11 .	45·3	
Peroxide of iron of No. 12 . .	7·6	
		100·0
Limestone of the above description		7·9
Protoxide of manganese . .		1·85

16 Scoria, belonging to the pig No. 15.

17 Middle bloom from the pig No 13, refined in the English manner.

18 Bar from the pig-iron of No. 13, the blooms being welded in the flame of charcoal and wood.

19 Middle bloom from the pig-iron of No. 15, refined as above stated.

20 Bar from the pig-iron of No. 15, the blooms being welded in the flame of charcoal and wood.

Mark : C.B.F., Gaswaldt. Agent : C. F. Wœrn, Esq., Gothenburg.

[The Swedish iron and steel has long been esteemed; and in this series we have exhibited all the conditions to which that superiority is due. The magnetic iron ore is furnished by nature in abundance. In England this ore is only known to occur in two localities—one near Penryn, in Cornwall; and the other on Dartmoor, in Devonshire. This, and the use of charcoal and wood in the smelting processes, appears to be the chief cause of the excellence of the iron of Sweden.—R. H.]

2 Rettig, Carl Anton, *Gefle and Kihlaforss, Sweden*—Producer and Manufacturer.

Specimens of iron ore from the Hammarin mines, in the district of Roslagen, not far from Stockholm.

Two specimens of pig-iron from the same ore.

Three musket-barrels, completed at the Royal Musket Factory.

Specimens of hardened steel from the same iron.

Specimens of polished work, in the same steel.

3 Blast Furnace of Grekasar, *Orebro and Grekasar, Sweden*—Producers.

a, b, c, d. Specimens of iron ore, in use at the Blast Furnace of Grekasar, province of Nerike.

Specimen of pig-iron as thence produced, from a set of $\frac{3}{8}d.\ \frac{1}{8}a.\ \frac{3}{8}c.\ \frac{1}{8}b.$

Specimen of bar-iron, manufactured from the said pig-iron at the forges of Stadna and Finna.

Specimen of the same bar-iron twisted into a spiral.

4 Hellefors Iron Works, *Orebro and Hellefors Sweden*—Producers.

a, b, c, d Specimens of iron ore in use at the blast furnace and foundry of Hellefors.

Scoria and pig iron from the same furnace.

5 Osterby Iron Works, *Upsala and Osterby, Sweden*—Producers (Baron Tamm, Proprietor).

Specimens (A, B) of iron ore from Dannemora mines.

Specimens (C, D) of pig-iron and bar iron from Osterby.

Specimens (E, F) of converted steel from Osterby.

Specimens (G, H) of scoriæ from Osterby.

6 Motala Iron and Engine Works, *Motala, Ostergöthland, Sweden*—Manufacturers.

Round iron rolled $\frac{5}{16}$ and $1\frac{1}{2}$ inch.

Square iron, $\frac{5}{16}$ and $\frac{5}{8}$ inch.

Tubes for steam-engine boilers.

Frames for iron vessels, $3\frac{1}{2}$ and $2\frac{1}{2}$ inch.

Edges for steam-engine boilers, 3 and $1\frac{1}{2}$ inch.

Puddled iron, not balled.

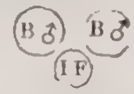
Plates from unballed puddled iron.

Plates from balled puddled iron.

Pig iron for castings.

7 Flood, Jorgen, *Porsgrund, Norway*—Producer.

Specimens of iron ores and bar iron, marked



These specimens were derived from Bolvigs Ironworks, near Porsgrund.

8 Hoe, Hermann, *Drontheim, Norway*—Manufacturer.

Specimens from the chrome manufactory near Drontheim.

9 Tunaberg Cobalt Works, *Sweden*—Producers.

1—3 Crystals of cobalt ore.
4 Washed cobalt ore.
5 Oxide of cobalt.
6 Chaux metallique (calcinated).

The cobalt ore obtained at Tunaberg, in Sweden, is highly esteemed as a source of the oxide of cobalt employed in communicating a blue colour to glass and earthenware. It consists, by analysis, of—

Cobalt . .	44
Arsenic . .	55·5
Sulphur . .	0·5
	100·0

[This ore is of the gray variety, and the crystals are extremely brilliant, resembling steel. The cobalt ore is prepared by pulverising and washing, and subsequently by calcination in a reverberating furnace. By this it is oxidised, and it is then finely sifted and mixed with sand when required for use. Smalt is, properly speaking, simply a blue glass in powder, its colour being derived from the admixture of a small portion of oxide of cobalt.—R. E.]

10 Zetterberg, Christian, *Eskilstuna, Sweden* — Manufacturer.

Specimens of sabres and swords.

11 Ironmongery from *Eskilstuna, Sweden.*

Halleberg, L. J.—Manufacturer.

1—26 Steel cutters.
27 Brace, with bits.

Heljestrand, C. V.—Manufacturer.

28 Razors.

Lundqvist, A.—Manufacturer.

29—33 Cutlery.

Oesterberg, C. G.—Manufacturer.

34, 35 Cutlery.

Svalling, F.—Manufacturer.

36—42 Cutlery.

Oeberg & Co.—Manufacturers.

43—50 Files and rasps.

Rudberg, C. G.—Manufacturer.

51—56 Rasps.

Thunberg, C.—Manufacturer.

57—62 Files and rasps.

Haglund, E.—Manufacturer.

63, 64 Files.

Hedlund, J.—Manufacturer.

65—82 Padlocks.

Björk, C. L.—Manufacturer.

83 Bench vice.

Lundberg, R.—Manufacturer.

84, 85 Locks.

Ulander, F.—Manufacturer.

86, 87 Locks.

Hallenius & Co.—Manufacturers.

88—90 Locks.
91—106 Sundry ironware.

Walén, J.—Manufacturer.

107, 108 Sundry ironware.

Spångberg & Co.—Manufacturers.

109—117 Sundry ironware.

12 Steel Wares, polished, etched, and gilt, by various makers at *Eskilstuna.*

1 Paper scissors, polished.
2, 3 Rules, etched and gilt.
Paper knives and scissors, gilt.
Steelplate, with a view of the Royal Palace, Stockholm.

12a Stille, Albert, *Stockholm*—Manufacturer.

One pair of razors, etched and gilt.
One pair of razors, etched.
One paper knife, etched and gilt.

13 Godgärd Forges, *Norrköping and Godgärd, Sweden*—Manufacturers.

Box containing brads.

14 Viberg, A. P., *Falun, Sweden*—Manufacturer.

Chemist's balance, with gramme weights.
Universal compasses. Drawing instruments.

15 Littman, E., *Stockholm, Sweden*—Manufacturer.

Instrument for examining the bore of guns and determining the amount of its elevation when found deficient.

Chemist's balance, with gramme weights.

Universal compass. Drawing instruments. Miners' quadrant. Levelling instrument, with stand. Microscope.

16 Guldsmedshyttan Mines, *Linde and Guldsmedshyttan, Sweden*—Producers.

Specimens of silver and lead ores.

17 Johansson, J., *Stockholm, Sweden*—Manufacturer.

Specimens of stearine.
Specimens of stearine candles.
Specimens of moulds for casting.

18 Lamm, S. L., *Stockholm, Sweden*—Manufacturer.

Two large spermaceti candles.

19 Woollens from *Norköping, Sweden.*

Bergewall, F.—Manufacturer.

1 Specimens of broad-cloth.
2 Specimens of duffel.

Söderberg & Arosenius—Manufacturers

3 Specimens of blue cloth, dyed in the wool.

Landmark, T.—Manufacturer.

4 Specimens of brown cloth.

Malmgren, C. T.—Manufacturer.

5 Specimens of mixed cloth.

20 Various samples of Swedish wool.

21 Specimens of flax, water-retted; the same, scutched by hand; the same, unhackled. From Angermanland in the north of Sweden.

[The term water-retted, as applied to flax, implies that it has undergone a process of fermentation and partial putrefaction in water. This process is adopted with a view of decomposing the gluten of the stalk, so as to insure the ready separation of the fibres. In order to accomplish it the flax is bound in sheaves and placed in water for a proper time.—R. E.]

22 Specimen of flax thread, spun by a girl thirteen years of age, in Angermanland.

23 Piece of linen, such as is made in hand-looms by the peasantry in Angermanland.

24 Casparsson & Schmidt, *Stockholm, Sweden*—Manufacturers.

Specimens of satin, moire façonnée, gros de Naples (coloured and black), shawl, and a neck-handkerchief.

25 **Meyerson, L.**, *Stockholm, Sweden*—Manufacturer.

Specimens of brocatelle, from silk produced in Sweden.
Specimens of taffetas quadrillé.
Specimens of gros de Naples.
Various shawlettes.

26 Samples of cotton goods, made in hand-looms, by the peasantry in several districts of the province of Westergöthland, and sold without any dressing, to the annual amount of from 8 to 10 millions of yards.

27 **Fürstenhoff, Emma**, *Stockholm, Sweden*—Manufacturer.

Specimens of artificial flowers, executed in wax and other materials, for the purposes of ornament, as well as botanical study; viz.:—

1 *Dielytra spectabilis* (Nat. Order, *Fumariaceæ*); country, China.

[It is stated that this magnificent plant has only blossomed twice in Europe; once at Chatsworth, the seat of his Grace the Duke of Devonshire; and once in March last, in the gardens of Mr. Martin, at Paris.]

2 *Oncidium Cavendishii.*
3 *Phalæmopsis amabilis.*
4 *Vanilla planifolia.*
5 *Odontoglossum grande*, and several others, the whole of which are fully detailed in an accompanying catalogue.

28 **Hamrén, Sophie**, *Halmstad, Sweden*—Designer and Manufacturer.

Needlework embroidery on muslin, representing the royal palace of Ulriksdal, near Stockholm.

29 **Horn, Mrs.**, *Halmstad, Sweden*—Designer and Manufacturer.

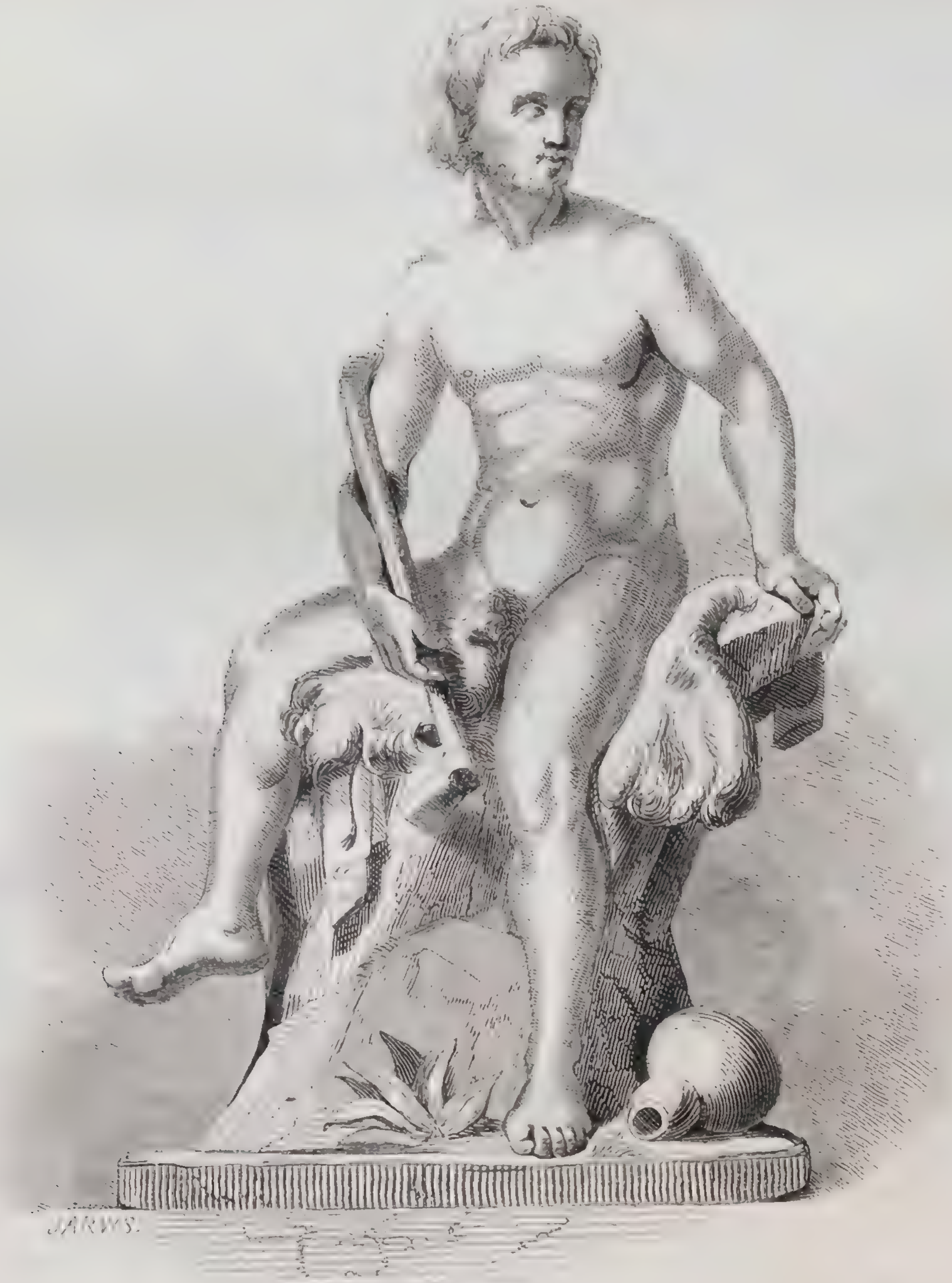
An embroidered pocket-handkerchief.

30 **Almgren, K. A.**, *Stockholm, Sweden*—Manufacturer.

A portrait of King Oscar, woven in silk.

31 **Hillman, Adolph**, *Gefle, Sweden*—Proprietor.

Statue in marble, representing a shepherd. This statue was lately executed at Rome by Mr. Molin, a Swedish sculptor, and is represented in the annexed engraving.



Statue of a Shepherd. Executed by M. Molin: exhibited by A. Hillman.

32 De Liewen, Madlle. H., *Stockholm, Sweden.*

Portrait of Jenny Lind, sculptured in pasteboard by exhibitor.

33 Johnsdotter, Christina Margareta, *Hernösand and Sidensjö, Sweden*—Manufacturer.

A skein of flaxen thread, 4,000 Swedish ells in length, spun by the exhibitor, a peasant's daughter in the district of North Angermanland, from the flax grown in the parish. Exhibited for its extraordinary fineness and even appearance. Notwithstanding its great length, it weighs less than half an ounce.

34 Kongsberg, Silver Works of, *Norway*—Producers.

Thirty-two specimens of silver in its different stages, from the mines and works of Kongsberg, in Norway, belonging to the State.

(A) Samples of the silver lode, viz.:

One of 558 marks, estimated to contain 214 marks of fine silver.

One of 323$\frac{1}{4}$ marks, estimated to contain 86 marks of fine silver.

(B) Samples of silver and slime from the Stampworks at Armen and the King's Mine, viz.:

Middle-ore silver, containing about 87 per cent. fine silver, weight $\frac{1}{4}$ mark.

Stamp-ore silver, same per centage and weight.

Ore (malm) silver, same per centage and weight.

Middle-ore slime, containing fine silver on an average 1$\frac{5}{16}$ per cent.

Stamp-ore slime, containing fine silver on an average 1$\frac{5}{16}$ per cent.

Stamp-ore buddle slime, containing fine silver on an average $\frac{59}{64}$ per cent.

Godtslig (good slime), containing fine silver on an average $\frac{69}{128}$ per cent.

Ringtslig (poor slime), containing fine silver on an average $\frac{11}{64}$ per cent.

Buddle slime, containing fine silver on an average $\frac{7}{32}$ per cent.

Slime, containing fine silver on an average $\frac{1}{16}$ per cent.

(C) Sundry samples of native silver numbered 1 to 19, weight 67$\frac{3}{16}$ marks.

(D) Silver bar, No. 2, of the first smelting of 1851, weight 128$\frac{31}{64}$ marks. Contents of fine silver 127 marks, 5 *lod*, 16$\frac{37}{128}$ *grains*.

35 Lovenskiold, —, *Skien and Fossum, Norway*—Producer and Manufacturer.

Specimens of iron ore and wrought iron produced from the former, both from Fossum Iron Works near Skien. The iron bars have been bent and twisted when cold, and the strength of this iron has been tested, the result being that a bar whose section is one-tenth of an inch square bore a longitudinal tension equal to 1,700 pounds without fracture.

36 Treschow, —, *Laurvig and Fritzoe, Norway*—Manufacturer.

Three iron bars from Fritzoe Ironworks, near Laurvig. These bars were bent and drawn in knots when cold, and are exhibited on account of the strength, toughness, and density of the material.

37 Roraas Copper Works, *Röraas, Norway*—Producers.

Specimens of copper from the works.

38 Garmann, H. C., *Drontheim, Norway*—Producer.

Specimens of chromate of iron, raw and purified by washing and stamping.

[Chromate of iron occurs as a native ore in several parts of the world, and forms the only available source for the elimination of the important element chromium—in combination generally with potash for the purposes of commerce. The ore is reduced by being crushed, and afterwards mixed with nitrate of potash and calcined. Chemical combination between the potash and chromic acid then takes place, and the bichromate of potash is separated from the mass by washing in water, in which it is very soluble. On evaporation of the solution most brilliant crystals are developed. This substance is largely employed in the arts of dyeing and calico printing.—R. E.]

39 Leeren Manufactory, *Drontheim and Leeren, Norway*—Manufacturer.

Specimens of bichromate of potash from the factory.

40 Kongsberg Manufactory of Arms, *Kongsberg, Norway*—Manufacturer.

A musket as made for the soldiers of the Norwegian army.

41 Tostrup, Jacob, *Christiania, Norway*—Proprietor.

Specimens of pearls found in different places on the coast of Norway, especially near Mandal and Stavanger, and collected by the exhibitor. The pearls are distributed in three small boxes, containing respectively 34, 66, and 24 pearls, and 1 shell.

42 Alner, Madlle Anna, *Söderhamn, Sweden*—Designer.

Portraits in needlework, representing—

1 Her Majesty Queen Victoria.
2 His Majesty King Oscar.
3 His Grace the Duke of Wellington.

43 Hjula Quarry, *Christiania and Hjula, Norway*—Producers and Manufacturers.

Vase, boxes, knifehandles, &c., cut in various kinds of stone. Samples of stone.

44 Thesen, N. P., *Christiania, Norway*—Proprietor.

Various objects carved in wood by the native peasantry viz.:—

Bucket; oval tub with cover; tobacco-box; boxes; jugs; spoons; clasp knives; caddy; paperweight; and tumbler.

The accompanying Plates 229 and 230 represent these objects.

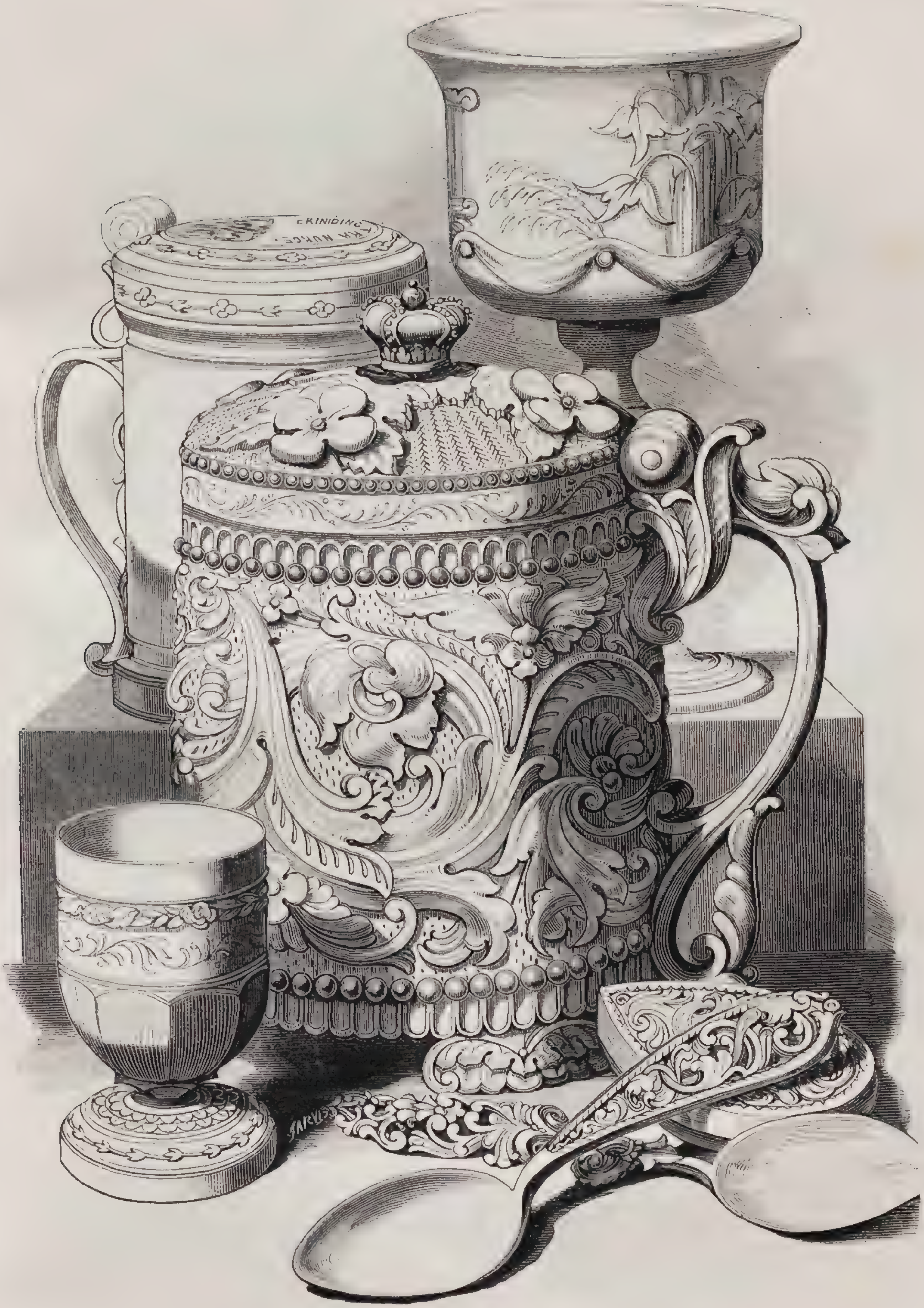
Box carved in sandstone and knife-belt, of Christiania manufacture.

Clasp-knife, with stone handle; board, with pressed flowers.

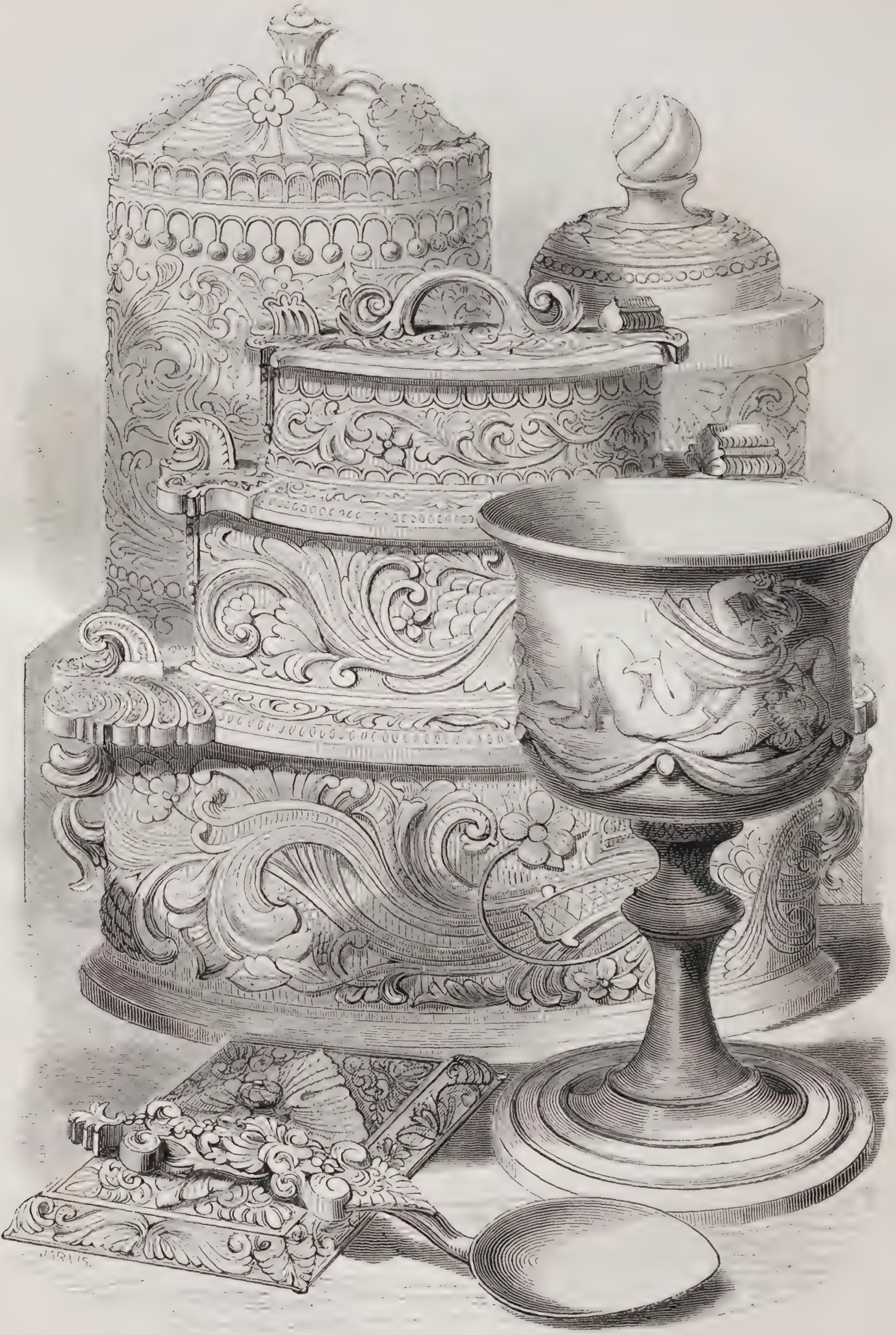
45 Rosenkilde, Major Christopher, *Christiansand, Norway*—Inventor.

Safety spring window, requiring no lines or weights.

[This fastening, while it is perfectly secure against the possibility of persons from without opening up the sash for the purpose of entering the house, has also the additional advantage of presenting such an obstacle to children opening the window on the inside as to make it a valuable addition to the windows of nurseries. It is, at the same time, easily opened by grown persons. It consists of a spring which is fitted into a recess made in the edge of the style of the sash; the free end of the spring has connected to it a projecting piece which takes into a catch formed in the window frame, by which the sash is immoveably fixed until the projecting piece is pressed or lifted out of the catch, for which purpose the end of the spring projects a small distance beyond the surface of the sash-frame, so that by applying the finger to that projection the sash-frame is then free to be moved either up or down as the case may be.]



SPECIMENS OF CARVING IN WOOD BY THE NORWEGIAN PEASANTRY.
EXHIBITED BY J. P. THEREN, CHRISTIANA.



230. SPECIMENS OF CARVING IN WOOD BY SWEDISH PEASANTRY.

46 Tostrup, J., *Christiania, Norway*—Manufacturer.
Ornamental box of chiselled silver, intended to hold consecrated wafers for the altar service.

47 Elfdahl's Porphyry Works, *Sweden*—Producer and Manufacturer. (Capt. P. W. P. Wallis, R.N., *Homebush, Southsea*—Proprietor.)
Two porphyry vases, on pediments of polished red granite; executed at the above works in Sweden.

48 Danckwart, Lieut., *Wernumo, Sweden*—Artist.
Portrait of Jenny Lind, carved in ivory.

49 Palmgren, P. F., *Stockholm, Sweden*—Manufacturer.
Silver drinking-can.

50 Ahlborn, C., *Stockholm, Sweden*—Designer and Manufacturer.
Picture frame, carved in wood, intended to surround a sculptured figure of the Saviour, and representing in its principal parts objects in connexion with the subject of the sculpture, namely—above, flowers, as an emblem of Patience; to the left, angel with rose-branch, symbolical of Love; to the right, angel with lilies, representing Innocence; underneath, ivy and palm leaves, denoting Eternity and Peace.

51 His Majesty the King of Sweden—Proprietor.
Colossal urn of porphyry, manufactured at the porphyry works of Elfdahl, in Sweden.
Table, with inlaid top, composed of different descriptions of Swedish stone.

52 Wahrendorff, M. Von, Baron, *Akers Foundry, near Mariefred, Sweden*—Manufacturer.
Seventy-two-pound bomb cannon, with an invention for introducing the charge from behind; and its carriage, made of iron. This kind of ordnance has been selected to mount the fortress of Waxholm, at the entrance to Stockholm from the sea. The specimen exhibited has been duly tested.
Six-pound field cannon, Swedish model.
Six-pound field cannon, Danish model.

53 Wegelin, J., *Stockholm, Sweden*—Inventor and Proprietor.
Coach, in the construction of which several new inventions have been adapted; such as the wheels being without naves, the axletrees moveable, and the turning effected in an eccentric curve by the fore-carriage.
Gig, also with new inventions introduced in its construction. Seven spiral springs for carriages.

54 Norman, —, *Stockholm, Sweden*—Manufacturer.
Sledge, with apron, covered in bearskin.

55 Kreuger, Admiral, *Stockholm, Sweden*—Inventor.
Wind-meter, constructed by the exhibitor.

56 Bolinder, J. & C., *Stockholm, Sweden*—Manufacturers.
Two kitchen-ranges, of iron. Ship's cabouse, of iron.
Ironing oven, with flat irons appertaining.

57 Bohman, E. J., *Stockholm, Sweden*—Manufacturer.
Etager, of Jacaranda, with plate-glass back.

58 Stenström, P. A., *Stockholm, Sweden*—Manufacturer.
Dressing bureau, with polished ornaments on a ground.

59 Malmqvist, A., *Stockholm, Sweden*—Manufacturer.
Dressing bureau, with inlaid zinc ornaments.

60 Dumrath, H., *Stockholm, Sweden*—Manufacturer.
Loo table, with inlaid ornaments in different metals.

61 Edberg, C. K., *Stockholm, Sweden*—Manufacturer.
Writing table, of Jacaranda wood, ornamented, and with a novel contrivance for locking it up.

62 Rosenwall, P., *Stockholm, Sweden*—Manufacturer.
Grand pianoforte.

63 Sjöblom, C. G., *Stockholm, Sweden*—Manufacturer.
Painted table, china pattern.

64 Johnson, A., *Stockholm, Sweden*—Manufacturer.
Work-table in papier maché.

65 Ehrenberg, J. F., *Stockholm, Sweden*—Manufacturer.
Spinning-wheel, for double spinning, of measle birch.

66 Möllenborg, G., *Stockholm, Sweden*—Manufacturer.
Candlestick, with two figures, in chiselled silver, with glass painting.

67 Folcker, G. F., *Stockholm, Sweden*—Manufacturer.
Salver (tea-tray), in chiselled silver.
Flower vase, in silver filigree work.
Drinking can, in embossed silver, representing a scene from Bellman.

68 Palmgren, P. J., *Stockholm, Sweden*—Manufacturer.
Inkstand in embossed silver.

69 Bergström, J. W., *Stockholm, Sweden*—Manufacturer.
Chandelier, for 42 lights, of chiselled bronze, gilt.
Two candelabras, with figures in the same material, for six lights each.
Two candlesticks, with figures in the same material, for four lights each.

70 Djurson, C., *Stockholm, Sweden*—Manufacturer.
Lamp of embossed brass.

71 Dahlbom, P. A., *Stockholm, Sweden*—Manufacturer.
Tea-urn of embossed brass. Three lacquered tea-trays.
Three lacquered bread-baskets.

72 Ahlberg, O., *Stockholm, Sweden*—Manufacturer.
Tenor-horn, of embossed brass.

73 Ahlbeck, G. C., *Stockholm, Sweden*—Manufacturer.
Sword of gilt and damascened steel.

74 Warodell, L. J., *Stockholm, Sweden*—Proprietor.
Sixteen different pieces of etched and gilt-steel ware, manufactured in Sweden, such as paper-scissors, knives, rules, &c.

75 Kockum, G., *Malmo, Sweden*—Proprietor.
Seven anvils, hammers, &c., of fine polished cast-steel.

76 Lidberg, A. G., *Stockholm, Sweden*—Manufacturer.
Twelve goldsmiths' and watchmakers' tools.

77 Bergström, J. W., *Stockholm, Sweden*—Manufacturer.
Bright filed picklock, for double lock.

78 Hook's Iron Works, *Smaland, Sweden.*
Double-barrelled gun, with percussion lock, and engraving, made by a smith's apprentice, at the above place.

79 Hagström, —, *Stockholm, Sweden*—Manufacturer.
Brace of pistols, for mark-shooting.

80 Bergquist, —, *Stockholm, Sweden*—Manufacturer.
Three models of the Swedish artillery's cannon.

81 Hultman, J. A., *Stockholm, Sweden*—Manufacturer.
Two large lacquered balances.

82 Nystrand, —, *Eskilstuna, Sweden*—Manufacturer.
Pair of skates, with their straps, &c.

83 Ekman, G., *Lessjöforss, Sweden*—Manufacturer.
Ten bundles of different kinds of iron wire.

84 Stahlberg, —, *Eskilstuna, Sweden*—Manufacturer.
Twenty-four carpenters' tools.

85 Bergström, J. W., *Stockholm, Sweden*—Manufacturer.
A chemical balance, with a load of 500 gram. It will give a decided indication of an excess of one-half of a milligramme in either of the scales.
Hydro-electric induction apparatus, with pile.

86 Linderoth, G. W., *Stockholm, Sweden*—Manufacturer.
Time-piece, striking the hours, in carved and gilt framework.
Fine cog-wheels for watches.

87 Bernhardt, G., *Nyköping and Torp, Sweden*—Manufacturer.
Two carriage-wheels, and several parts of wheels, manufactured by machinery.

88 Folcker, J. P., & Son, *Stockholm, Sweden*—Manufacturer.
Ten pieces of silk damask, for furniture.

89 Almgren, K. A., *Stockholm, Sweden*—Manufacturer.
Piece of brocaded silk damask, for furniture.

90 Meyerson, L., *Stockholm, Sweden*—Manufacturer.
Two pieces of silk stuff, for covering furniture.

91 Casparsson & Schmidt, *Stockholm, Sweden*—Manufacturer.
Two pieces of flowery gros de Naples.

92 Hanel, C. E., *Stockholm, Sweden*—Manufacturer.
Two boxes, containing sundry cordwainers' trimmings.

93 Eliasson, L. J., *Norrköping, Sweden*—Manufacturer.
Six pieces of corduroy, for trousers.

94 Stenberg, G., *Jönköping, Sweden*—Manufacturer.
Three table-cloths and three dozen finger-napkins, made in hand-loom by exhibitor.

95 Haga Silkworm Plantation, *near Stockholm.*
Specimens of Swedish silk and cocoons.

96 Lindgren, Constance, *Stockholm, Sweden*—Manufacturer.
Three pieces of embroidery, one of them being a portrait of King Oscar.

97 Hasselgren, L. C., *Stockholm, Sweden*—Manufacturer.
Writing-case and a box of water-colours.

98 Johansson, J., *Stockholm, Sweden*—Manufacturer.
Case containing stearine candles. Stearine in cakes.
Case containing impressions in plaster.

99 Hierta, L. J., & Michaelson, J., *Stockholm, Sweden*—Manufacturer.
Sixteen packages of stearine candles.
Pot of clain soap. Bottle of sulphuric acid.

100 Kullgren, C. A., *Uddewalla, Sweden*—Manufacturer.
Colossal monument of granite, in form of a cross, cut out of a single block; the stone remarkably fine grained, and exhibited as a sample of quality, of material, and of workmanship. (See objects outside the building, Eastern end to which the numeral refers.)

100a Lundgren, P. W., *Stockholm, Sweden*—Manufacturer.
Grain, syrup, vinegar, &c., prepared from potatoes.

101 Seybolt & Co., *Stockholm, Sweden*—Manufacturers.
Three sugar-loaves, with overturning-pan.

102 Norberg & Sather's Iron Mines, *Sweden*—Producers.
Case containing specimens of ore.

103 Björckman, J. L., *Stockholm, Sweden*—Manufacturer.
Case containing boxes, little trays, &c., made of birch bark.

104 Beck, F., *Stockholm, Sweden*—Manufacturer.
Ten specimens of bookbinding.

105 Schuldheis, A. E., *Stockholm, Sweden*—Manufacturer.
Case containing comb-makers' ware.

106 Ericsson, A., & Co., *Stockholm, Sweden*—Manufacturers.
Four various hats.

107 Isoz, J. P., *Stockholm, Sweden*—Manufacturer.
Twenty-one pairs of gloves, different kinds.

108 Gulda, J., *Stockholm, Sweden*—Manufacturer.
Paletot, lining of Swedish martin fur.
Cloak, lining of Swedish squirrel skins.
Three muffs, various. Fur cape.

109 Forsell, D., *Stockholm, Sweden*—Manufacturer.
Stuffed silver bear skin, suitable for a mat to place under the writing table.
Fur coat, made of the skins of rein-deer calves, from Norrland.

110 Carlsson, C. A., *Stockholm, Sweden*—Manufacturer.
Twenty-nine specimens of brushes.

111 Arondal's Manufactory, *near Gothenburg, Sweden.*
Seven rolls of paper-hangings.

112 Stubecke, M., *Stockholm, Sweden*—Manufacturer.
Five pairs of boots and shoes, &c.

113 Heurlin, —, *Stockholm, Sweden*—Manufacturer.
A quantity of playing cards.

114 Warodell, L. J., *Stockholm, Sweden*—Proprietor.
Two pots, made of pot-stone, and mounted.

115 Broling, J., *Stockholm, Sweden*—Designer.
Proof-sheet of Swedish bank-notes, designed and executed by the exhibitor.

116 Kulberg, V., *Stockholm, Sweden*—Manufacturer.
Chronometer.

117 Uddeholm's Company, *Wermland, Sweden.*
Three specimens of steel iron ore.

DENMARK

South Areas, L. M. 68.

Royal Commissioner in London, Regnar Westenholz, Esq., 26 *Mark Lane; Agent*, C. J. Major, 21 *Billiter Street.*

About forty-seven exhibitors represent this country in the Exhibition. The articles exhibited illustrate several of the Classes, and include raw produce, machines, manufactures, and fine arts. Among the machinery, are a pump applicable also as a fire-engine, a steam-whistle also serving as a water-gauge for steam-boilers, a type-composing machine, and a chaff-cutting machine. Among philosophical instruments are several clocks and watches, inclusive of an astronomical clock of accurate construction, with a new escapement. There is also some apparatus for philosophical experiments, and several surgical instruments. Several nautical compasses, balanced by a new method, are exhibited. Interest will also be attached to a specimen of mechanical ingenuity and patience in the form of a file elaborately made and containing a number of small files and rasps within it. In the ceramic art two very different classes of objects are shown, but both of equal interest, though of greatly dissimilar value; of these, the first are specimens of the black crockery of the Jutland peasantry, made at their own homes, and 'glazed' by being smoked so thoroughly as to render them impervious to water. The other, are the productions of the Copenhagen Royal Porcelain Manufactory, consisting of vases, figures, &c., in a high style of art. One of the most interesting articles in this collection, to those concerned in the applications of the discoveries of philosophy to the requirements of mechanism, is to be found in the electro-magnetic engine exhibited by a native of this country. This engine illustrates the practical application of the electric current to the development of mechanical force through the induced magnetism of certain masses of soft iron. A considerable length of stroke has been gained in the machine, and the principal remaining problem, for its practical employment to the purposes of a prime mover, is the discovery of an inexpensive and continuous source of the electric current. When this can be found, if it may be considered possible, then electro-magnetic engines will to a great extent supersede those moved by steam and other powers.—R. E.

1 Puggaard, H., & Co., *Copenhagen*—Producers.

Samples of barley, grown in the island of Möen in 1850.

Samples of wheat.

2 Kolbjörnsen, Konrad, *Reikavik*—Proprietor.

Sample of Iceland wool.

3 Topp, Andreas Ludwig, *Copenhagen*—Manufacturer.

Specimens of white lamb-skins for glovers, prepared with alum; exhibited for their softness and susceptibility of receiving dyes.

Goat-skins, also prepared with alum, and of similar quality.

White sheep-skins, prepared with alum, for shoemakers.

[The process of preparing leather for gloves, &c., is called tawing. Kid and lamb skins are the varieties principally treated in this manner. After the skins have been washed and the hair removed, they are put into a mixture consisting of bran and water, and afterwards are manipulated with a solution of alum and salt. The subsequent preparation of the skins consists in applying a paste of flour and yolk of eggs, washing, smoothing, drying, and polishing. The leather is then fit for manufacture into gloves.—R. E.]

4 Drewsen & Sons, *Silkeborg, Jutland*—Manufacturers.

Specimens of paper, glazed when in its whole length by a glazing machine constructed by the exhibitors. This machine effects a considerable saving in the working power, as, with the assistance of two men, it will glaze double the quantity of paper in a given time that six men could in the old way between plates. It produces great smoothness without damaging the paper; whereas the process of glazing with plates makes the paper transparent. This machine will also glaze paper of all kinds in the shape and length in which it leaves the machine.

[The method of glazing paper in England is performed by causing it to pass between highly-polished steel-rollers.

When these are heated, paper is said to be hot-pressed. The rollers are kept in opposition by adjusting screws, and the pressure to which the paper is subjected is very great, the surface of rough paper becoming highly polished on leaving them. In other instances one steel roller is employed under the paper, while the glazing roller is a turned cylinder of paper. This cylinder is formed of an immense number of discs of thin highly-sized paper, which are cemented together and united by the hydraulic press into a cylindrical roll, and when sufficiently firm the mass is turned true in a lathe. Most probably the papers exhibited have been glazed by a somewhat similar apparatus. —R. E.]

5 WULFF, JENS, & SONS, *Brede, Schleswig*—Manufacturers.

Specimens of thread lace and cotton stuffs.

6 MEYER, J. E., *Copenhagen*—Manufacturer.

Specimens of japanned tea-trays, small trays, bread baskets.

Oil-cloth mats for dishes, tureens, lamps, &c.

Specimens of floor-cloth.

7 WARMING, E., *Copenhagen*—Manufacturer.

A carpet and foot-stool.

8 FJELRAD, *Jutland*—Proprietor.

Knitted worsted goods, viz., jackets, petticoats, stockings, &c., exhibited for their firmness, cheapness, and warmth. The produce of the private domestic industry of the peasantry of Jutland.

9 THOMSEN, —, *Randers*—Manufacturer.

Specimens of Randers gloves.

10 MATTAT, C., & SONS, *Randers*—Manufacturers.

Randers gloves for gentlemen and ladies, remarkable for their peculiar odour and softness. Specimens of Randers skins.

[These skins are probably imbued with some essential oil, to the presence of which their peculiar odour is due, as that of Russia leather to oil of birch.—R. E.]

11 PETERSEN, PETER LAURENTIUS, *Copenhagen*—Manufacturer.

Patent goloshes for ladies and gentlemen, invented by the exhibitor. The springs, which are made of India-rubber, do not lose their elasticity.

Gentlemen's dress and ordinary boots.

A calfskin such as that of which the boots are made. One-half of the skin is prepared with blacking invented by the exhibitor.

Ladies' black satin and prunella boots, with enamelled leather, and satin shoes.

12 LUNDE, P. F., *Copenhagen*—Manufacturer.

Pump, which can be used as a fire-engine.

Stove, for heating small or large rooms. The whole outer surface throws out heat in nearly an equal degree. The draught can be increased, decreased, or excluded; and a ventilating valve can be made to open or shut, so as to regulate the change of air.

A steam-gauge whistle, constructed in the workshop of the exhibitor, by Jacob Jacobsen, which, by a combination of levers, and the gauge employed in the usual steam-boiler water-gauges, shows the state of the water in a boiler, and gives notice to the ear when there is an excess or deficiency.

13 SÖRENSEN, CHRISTIAN, *Copenhagen*—Inventor and Manufacturer.

A machine for composing, and re-sorting the types after printing. This machine is said to be capable of arranging the types with mathematical precision.

14 JESSEN, NIELS STAAL, *Naval Arsenal, Copenhagen*—Inventor and Manufacturer.

A rifle, with an oval barrel, to discharge a conical ball. The preliminary rough part of the work has been performed at the gun factory at Hellebek, in Denmark; the remainder is the exhibitor's own work. This rifle is adapted for military and naval use, and the aim can be regulated for different distances.

Specimen of cartridge.

15 ANDERSEN, P., *Copenhagen*—Manufacturer.

A chaff-cutting machine, of simple construction, with which a considerable quantity of straw can be cut in a short space of time, and of any required length.

16 FUNCH, A., *Copenhagen*—Inventor and Manufacturer.

An astronomical clock, with an escapement of the exhibitor's own invention, constructed to give an impulse every ten seconds, which, being uniform, causes the pendulum to vibrate more freely than is generally the case, and is independent of oil. The clock only requires winding once a month.

17 JÜRGENSENS, SONS, *Copenhagen*—Inventors and Manufacturers.

Two box chronometers, having a peculiar free escapement and gold cylindrical regulating springs.

Gold watch, with two second-hands to ascertain the moment and the duration of an observation: this watch is distinguished from ordinary watches by the circumstance that the moment of an observation can be fixed without the necessity of stopping the watch.

Metallic thermometer of the exhibitors' invention; constructed to show both the temperature at the time of observation, and the lowest since the preceding inspection.

Metallic thermometer, of the same construction, with an additional contrivance, the invention of the exhibitors, for showing the maximum and minimum temperatures.

A model of the detached escapement, usually employed in the chronometers of Urban Jürgensen's Sons.

18 LANGGAARD, JOHAN PETER, *Copenhagen*—Inventor.

Model of patent surgical apparatus, for use in cases of spinal curvature. The construction of the machine is new and peculiar.

19 NYROP, CAMILLUS, *Copenhagen*—Manufacturer.

Various artificial legs—

1. For use after amputation of the thigh.
2. Artificial leg, being a combination of an artificial and a plain wooden leg, each of which may be used separately.
3. For use after an amputation of the shin-bone.
4. An artificial foot, to be used after amputation of the ankle, on Syme's method.
5. Another on Chopart's method.
6. For use after amputation just below the knee.
7. A plain leg, for use after amputation of the thigh, with a moveable case or box for the thigh, which can be compressed or expanded, according to the increased or decreased circumference of the stump of the thigh.

Spinal apparatus.

Osteotome, with two saws acting in rotatory motion against each other.

A rest or stand.

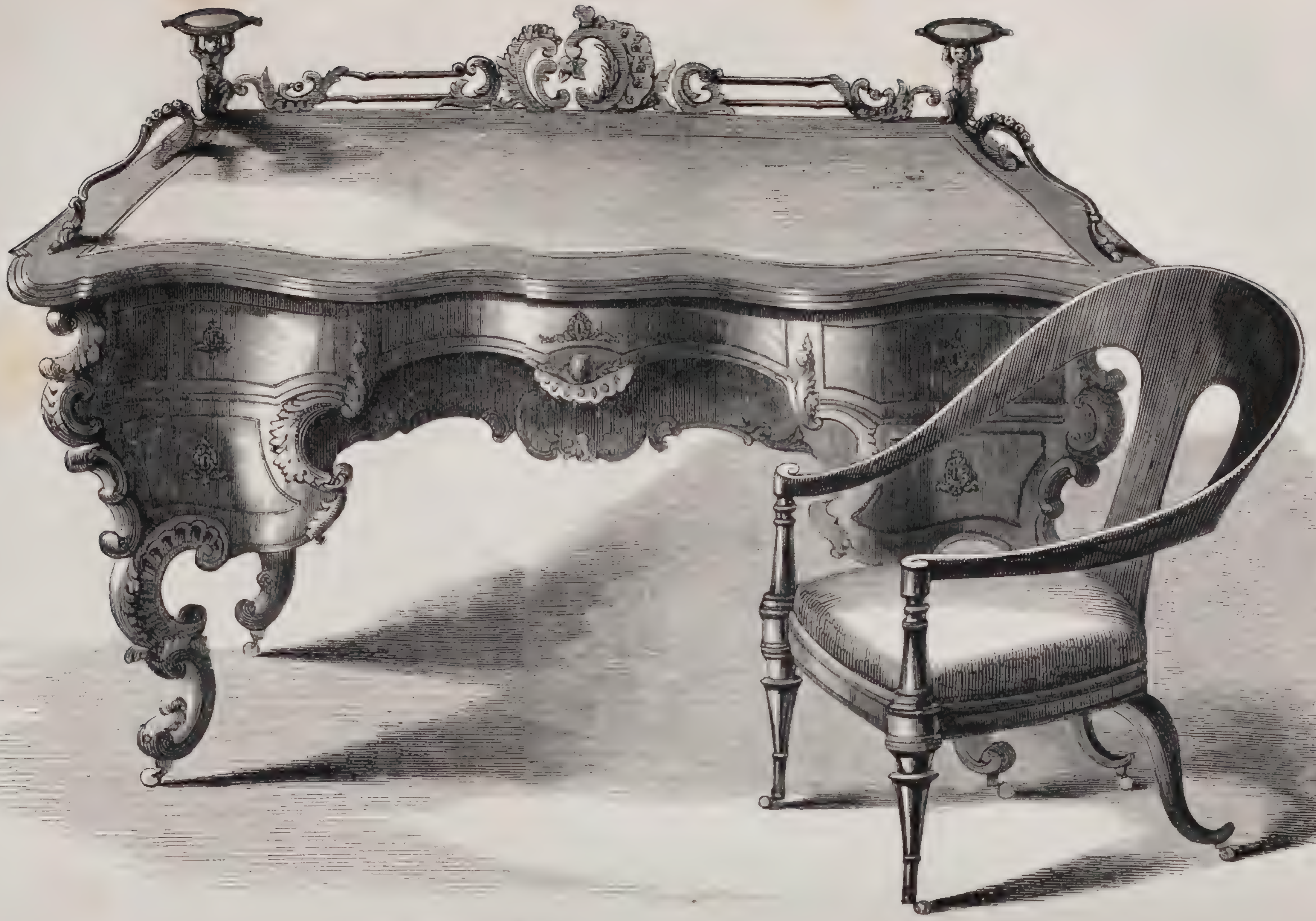
20 NISSEN, JULIUS, *Copenhagen*—Manufacturer.

Double-acting air-pump, with single cylinder.

Scales for chemical analysis; for precious metals; and for affination. Set of grain weights.

Barometers. Psychrometer. Thermometers, and thermometer tubes.

These instruments are exhibited for their peculiar construction and cheapness.



257. LADY'S WRITING TABLE AND CHAIR. M. HAUSEN, COPENHAGEN. DENMARK.

21 **Weilbach, Iwer Jensen**, *Copenhagen*—Manufacturer.

Azimuth compass, of small size, complete.

[The ordinary compass, when provided with sight-plate and furnished with a wire or thread, is an azimuth compass; and it serves to show how many degrees the north or south end of the needle is from the sun, as the compass may be turned round, in order to place the sights in the direction of the sun, whilst the box remains steady.—J. G.]

A transparent compass. In addition to the advantage of the common way of lighting up this compass from below, it may be also lighted from above; and the local attraction in iron-built ships may be counterbalanced by mounting it above the deck in the accompanying brass binnacle, which is provided with a lamp. This manner of using it is new, and "was suggested by the exhibitor." It has been tried and found efficient. It is provided with an improved balance.

A storm compass, which, after severe trials, has been found free in its motion and steady, from the application of a balance by the exhibitor.

A log-glass, invented by the exhibitor, to supersede the hour-glasses with sand. When required for use it is immersed in water, or in cold countries in spirits, with its broad end downwards. The hole in the broad end is closed by the thumb, the glass then taken out of the liquid and held with the point downwards: when the logging is to commence, the thumb must be raised, and the fluid runs out in fourteen seconds.

22 **Naylor, John William**, *Copenhagen*—Designer and Manufacturer.

A series of twelve files made of cast-steel, consisting of a four-square "rubber," cut like a smooth file, weighing about 10 lbs., part of which (in the form of four twisted serpents) can be screwed off, showing a round file within containing a three-square file 5 inches long; a four-square file 3 inches long; a round file 1¼ inch long, and a very small file. Of these, the four first mentioned differ from the ordinary form of cutting. The knob at the opposite end of the second round file also screws off, and contains six different small files and rasps.

23 **Wulff, —**, *Copenhagen*—Manufacturer.

Two brass tea-urns, executed by hand without the use of metal stamps.

24 **Potmager, Jens**, *Hjerting*—Proprietor.

Specimens of common crockery, called "black pots."

[These pots are made by the peasants of Jutland, and exposed during burning or baking to a very strong and dense smoke which penetrates their substance and answers the purpose of glazing. They are cheap and wholesome cooking vessels, being exempt from the inconveniences attending coarse pottery glazed by the application of lead. —R. E.]

25 **Hansen, C. B.**, *Copenhagen*—Designer and Manufacturer.

A lady's rosewood writing-table. A chair.

These are represented in the adjoining Plate.

26 **Nielsen, Niels**, *Copenhagen*—Designer and Manufacturer.

Book-case of oak, Gothic style, veneered inside with candlewood (wood of the lemon-tree).

27 **Holmblad, L. P.**, *Copenhagen*—Manufacturer.

Stearine candles of different sizes.

Playing cards, of two different qualities.

Glue, of two different qualities, viz., common horn glue and white patent glue. The first is remarkable for its binding qualities and clearness; the second possesses the adhesive strength in a still higher degree, and is besides scarcely visible where used, and is not so liable to attract dampness.

28 **Tutein, F.**, *Copenhagen*—Manufacturer.

Samples of crystallized sugar-candy, baked in a vacuum apparatus. The crystals are large and transparent.

29 **Smed, Sören**, *Copenhagen*.

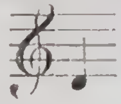
A carriage axle.

30 **Hornung, Conrad Christian**, *Copenhagen*—Inventor and Manufacturer.

Cabinet pianoforte, 6¾ octaves, and horizontal pianoforte, 6¾ octaves, in rosewood cases, both inlaid with metallic ornaments.

[In these instruments, the strings are fixed in a solid cast-iron frame, which is fastened to the case by bolts, so that the sounding-board can easily be put in or taken out of the case, if required, without taking off the strings, on simply separating them from the bridge. The durability of this construction has been tested by an experience of ten years.]

31 **Selboe, Johann Christoff**, *Copenhagen*—Manufacturer.

Ebony flute, B flat  with eleven silver keys, and an Archimedean bore.

Clarionet, in B flat, on J. Van Müller's construction, with two mouthpieces, the one with a metallic covering inside.

Hautboy, or oboe, with keys of German silver, on the older Dresden pattern.

[The *foot* of the flute is the lowest piece which, by means of keys (as in this case), can produce the note B natural below the key note D (*vide* description). Ebony is not a good wood for flutes. The clarionet was invented between 1690 and 1700 by John Christopher Denner; it then had but 7 holes, besides the B flat. The name is supposed to be the diminutive of clarion. Müller's clarionet had 13 keys to play in any key, dispensing with the use of 3 as commonly employed. Hautboy is, literally, high (sharp) wood; the date of its invention is unknown; it appears certainly to have been before 1029.—H. E. D.]

32 **Möller, Hans Peter**, *Copenhagen*—Inventor and Manufacturer.

An orthochord:—A tuning-fork, on the two prongs of which, opposite each other, are applied weights, which, being set to the degrees marked on the fork by letters, produce different tones.

[The invention of the tuning-fork is due to John Shore, an Englishman, sergeant-trumpeter to George I., and brother-in-law to Colley Cibber.—H. E. D.]

33 **The Royal Porcelain Manufactory**, *Copenhagen*.

A vase, ornamented with a painting of the Castle of Silkeborg and its environs, in Jutland, the painting by A. Junel.

A decorated vase, with paintings of flowers by C. Klein.

Two costly decorated dessert-plates, with paintings representing the Tuileries and the Palace of Fontainebleau; on the edge of the plates are portraits of French Kings whose history is connected with these palaces: the paintings by L. Lyngby.

Six pairs of decorated breakfast-cups and saucers, with paintings; and two gilt; exhibited on account of their decorations and cheapness.

Nineteen figures in biscuit, after Thorwaldsen, subjects from sacred and profane history.

Busts in biscuit, after Thorwaldsen, of Napoleon, Thorwaldsen, Oehlenschläger. Twenty-five bas-reliefs, in biscuit, after Thorwaldsen, subjects sacred, allegorical, and mythical. These works are copies of the immortal artist's productions, modelled after the originals in Thorwaldsen's museum.

A series of decorated Etruscan vases, modelled after real antiques, exhibited for their tasteful form, and being ornamented with paintings after Thorwaldsen.

[The porcelain manufactory of Copenhagen was commenced by Müller, a medical practitioner, in 1772, it being at first a joint-stock company. This speculation failing, it was purchased by the Danish Government, and has since remained in their hands, although it does not appear to have ever been a profitable manufactory. Müller commenced making figures in biscuit in 1802; and latterly the chief business of the establishment has been that of copying the works of Thorwaldsen, which has been gradually extending. The mark on the Copenhagen china is three *parallel wavy lines*—these signify the Sound and Great and Little Belts.—R. H.]

34 **Klingsey, Christian George**, *Copenhagen*—Manufacturer.

An ivory jewel casket, ornamented on the sides with work in bas-relief after Thorwaldsen, and having on the lid the group of Ganymede and the Eagle.

35 **Petersen, P.**, *Copenhagen*—Designer.

Four cameos, and a bronze medal.

36 **Conradsen, H.**, *Copenhagen*—Designer.

A reverse for a bronze medal.
A cameo, Love subduing a lion.
Shell cameo, a huntress.

37 **Schöler, P. C.**, *Copenhagen*—Inventor.

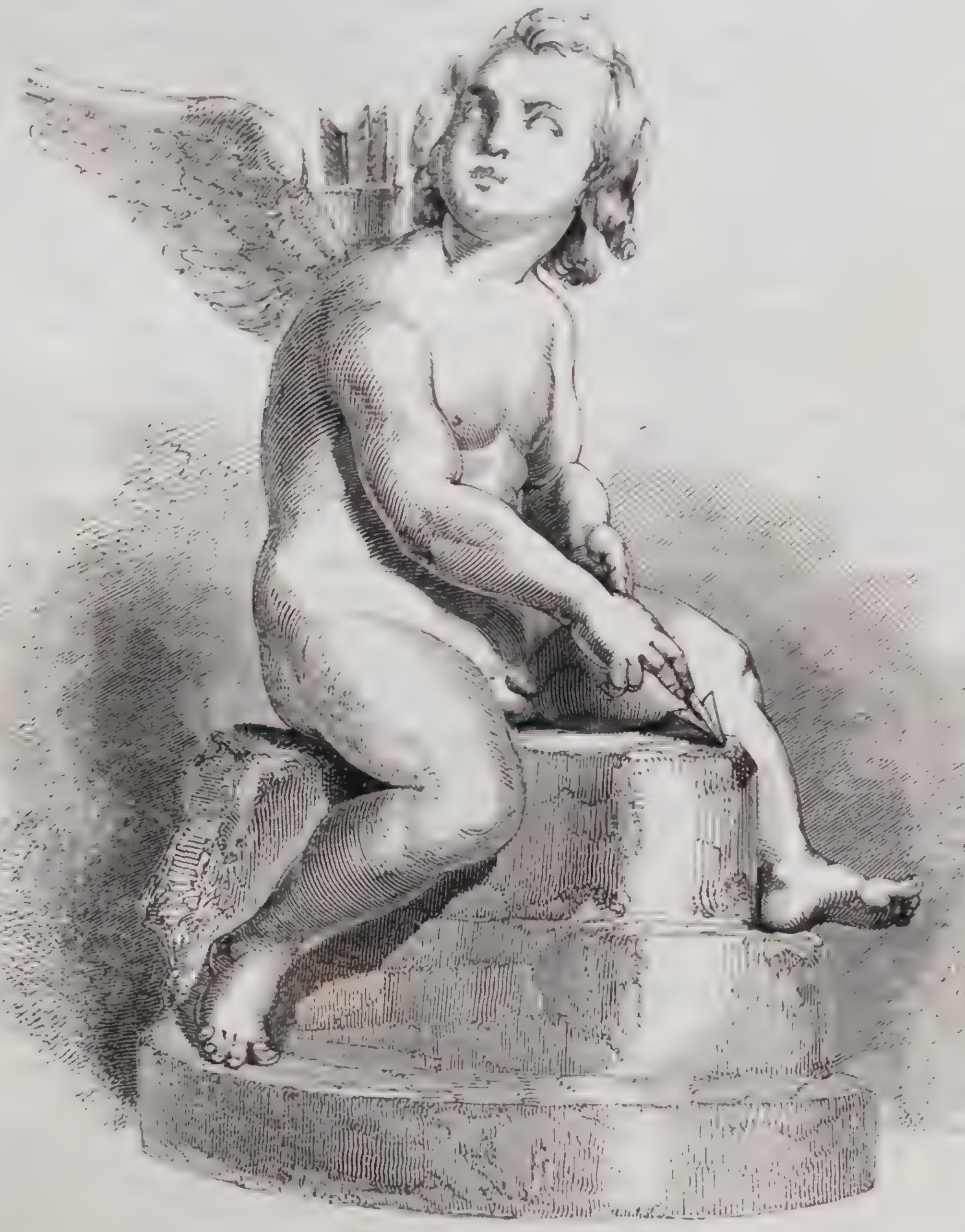
Specimen of a graphic mode of representation called stylography. The work is executed by means of a style in a black composition of resin, having a very thin white, paper-like surface; from this an impression is taken by electrotype, which is used for printing. By this process the art of engraving nearly resembles drawing, so that the person at work is enabled to judge as he proceeds of the appearance of his work when struck off on paper. As the engraving is executed in a soft mass without any exertion, any person who can draw will after a little practice be able to execute this kind of work.

The exhibited plates show the whole process, from the first plate covered with the mass of resin down to the finished copper plate, with a copy struck off from it.

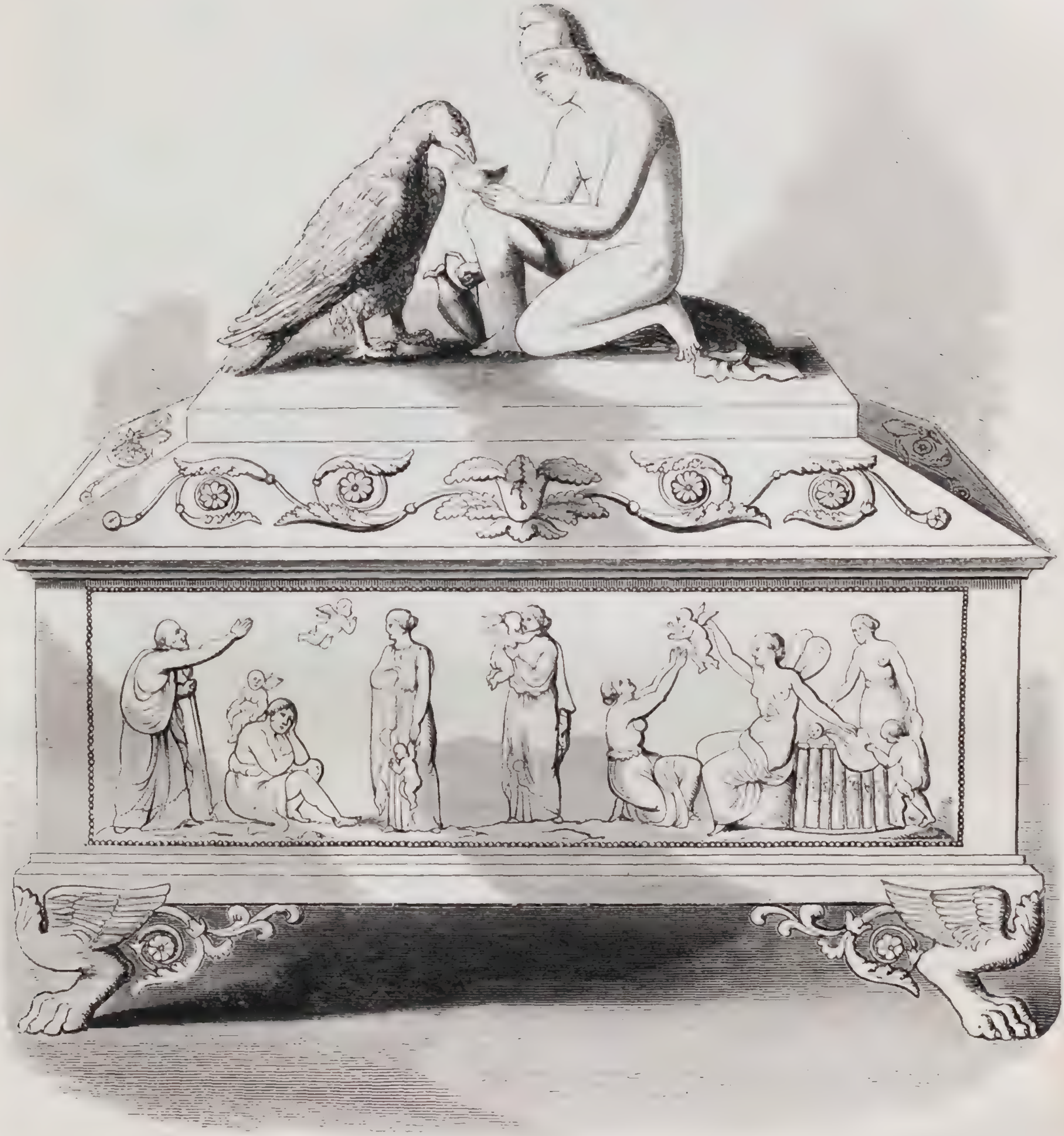
[This process is of a similar character to the glyphographic art, patented in this country. In both cases the drawing is made upon a yielding material, and the metal is deposited in the lines by the electrotype process. In many cases it has been found to offer advantages superior to those of wood engraving; but glyphography has not been extensively employed.—R. H.]

38 **Bissen, H. W.**, *Copenhagen*—Sculptor.

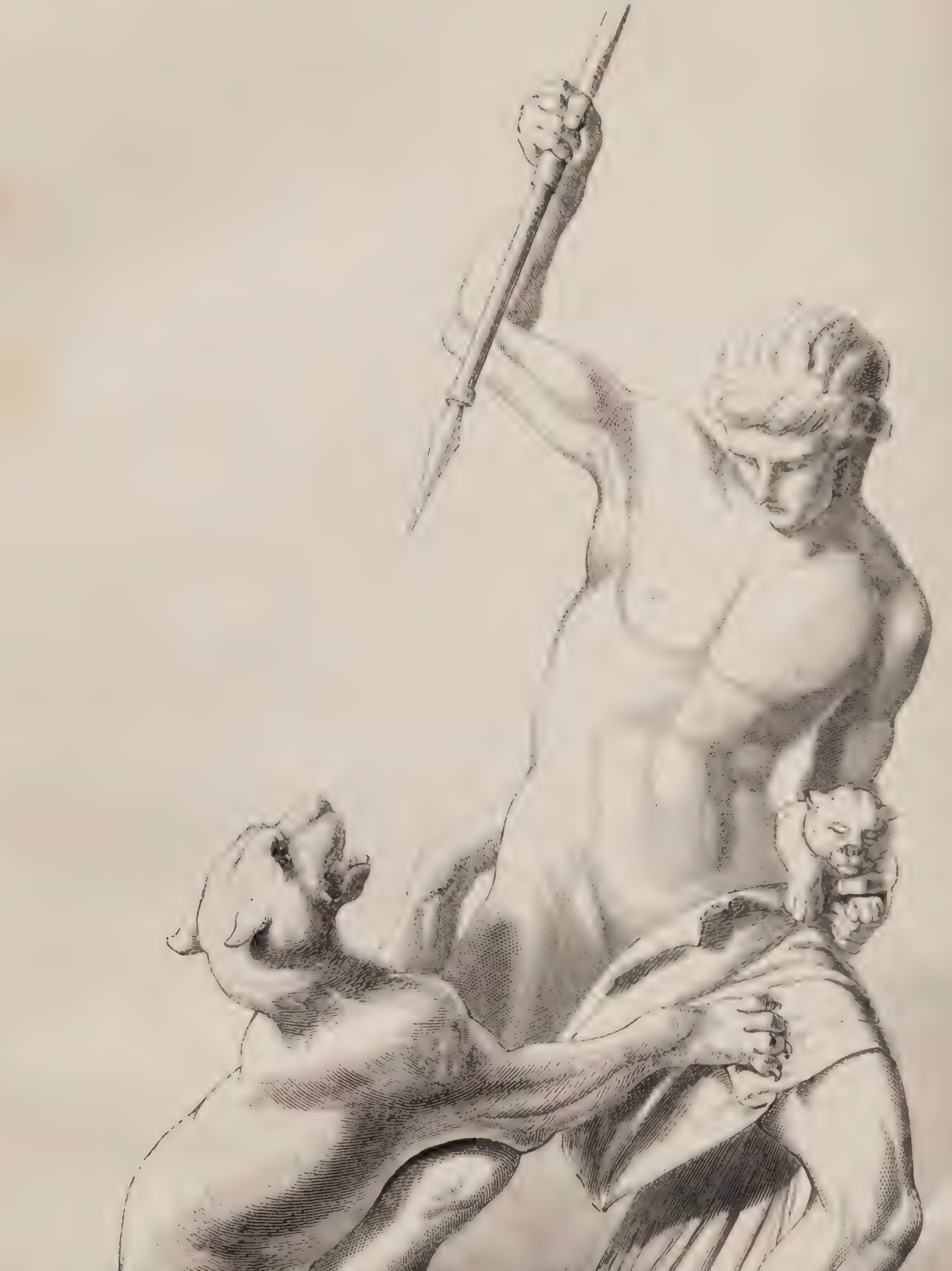
"Eros (Cupid) sharpening his darts."
This statue is represented in the accompanying cut.
A bust in marble.
"A Fisher-boy angling."
"Orestes, the avenger of his father, at the moment when the Furies appear before him."



Statue of Cupid. By H. W. Bissen.



264. IVORY JEWEL CASKET. M. C. G. KLINGSEY, COPENHAGEN. DENMARK.



179.

HUNTER AND PANTHER. M. J. A. JERICHAU. DENMARK.

39 **Jerichau, J. A.**, *Copenhagen*—Sculptor.

"Adam and Eve after their expulsion from Paradise," a group in plaster.

A group in marble, representing a hunter fighting with a female panther. The accompanying Plate represents this group.

Two basso-relievos in plaster, being specimens of a frieze representing "The wedding of Alexander the Great with Roxana," intended for the royal palace of Christiansborg, in Copenhagen.

One of these basso-relievos is shown in the annexed cut.

A bust in plaster.

40 **Dirsken, G.**, *Kiel*—Manufacturer.

Fire-buckets, engine, hose, &c.

41 **Holzapfel, C.**, *Altona*—Manufacturer.

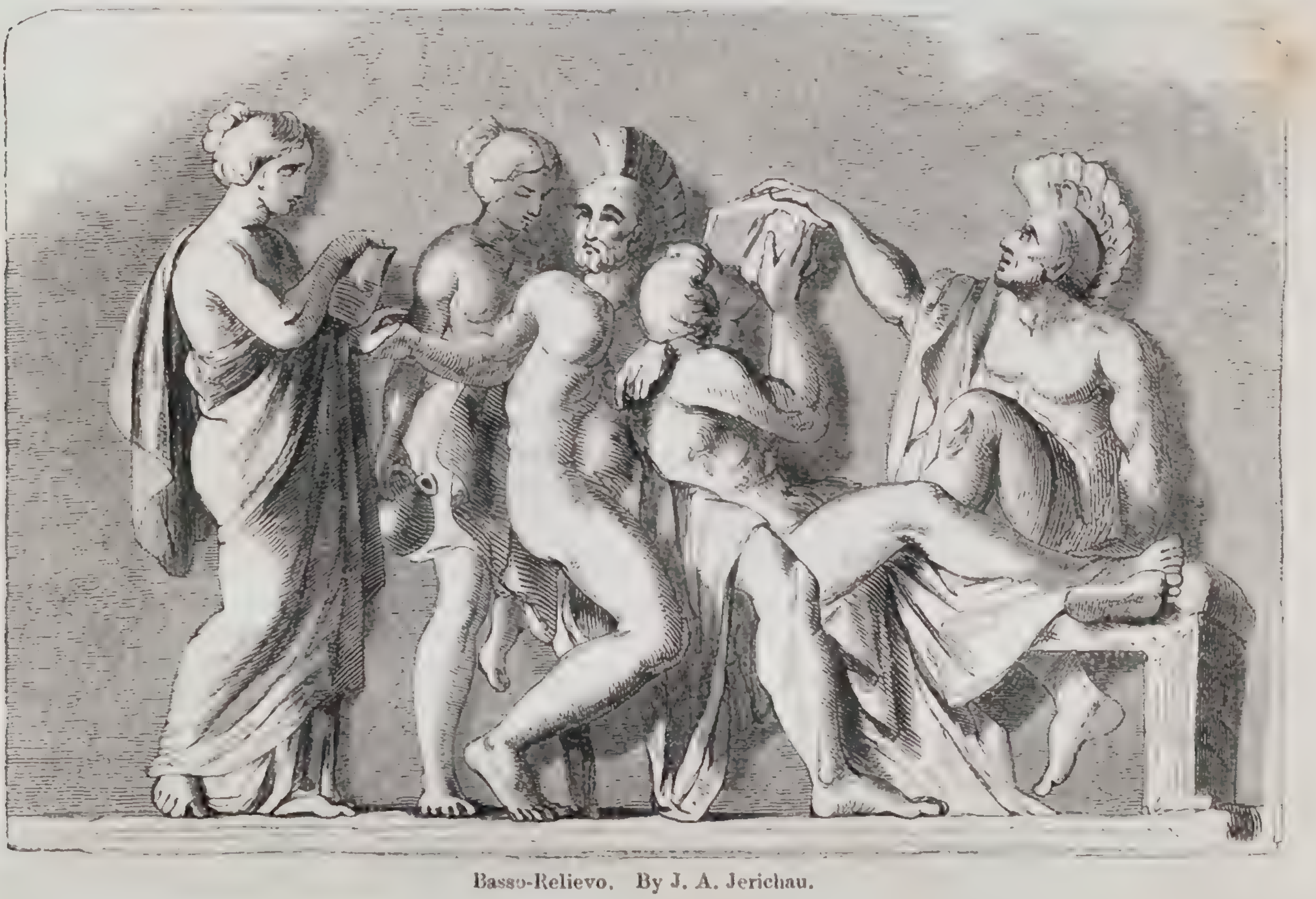
Fringe for curtains.

42 **Lange, H.**, *Altona*—Manufacturer.

Specimens of hair-work.

43 **Meyer, A. D.**, *Altona*—Manufacturer.

Four tin jelly-moulds.



Basso-Relievo. By J. A. Jerichau.

44 **Owen, J.**, *Copenhagen*—Manufacturer.

Samples of sulphuric acid, muriatic acid, aquafortis, linseed oil, turnip oil, refined turnip oil, fine bone charcoal, granulated bone charcoal, patent manure; bone manure, phosphate of lime, Glauber salts, Roman cement, and green soap.

Linseed cakes, and rape cakes.

Rosin soap, palm-oil soap, white soap, and flint soap.

45 **Benzon, —**, *Laaland*—Producer.

Sample of Danish barley.

46 **Voigt, —**, *Fühnen*—Producer.

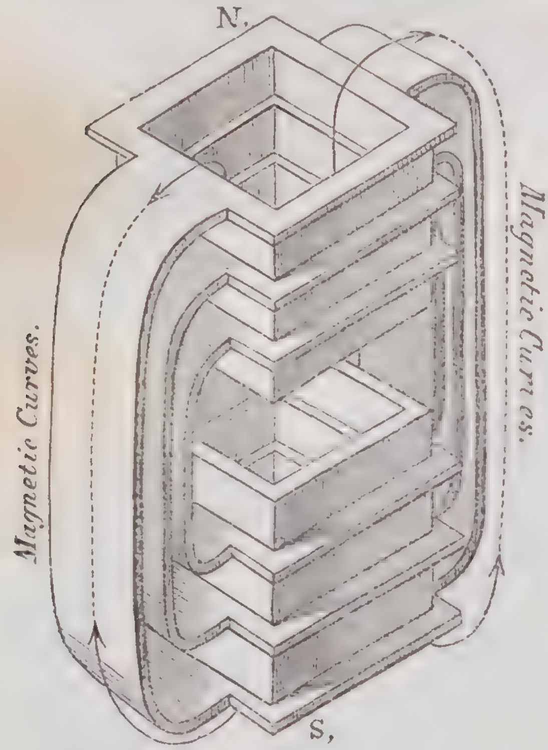
Sample of Danish oats.

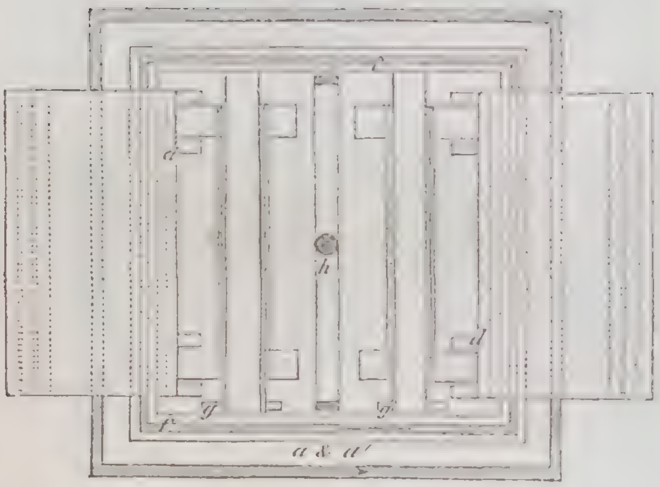
47 **Hjorth, Soren**, *Copenhagen*—Inventor and Manufacturer.

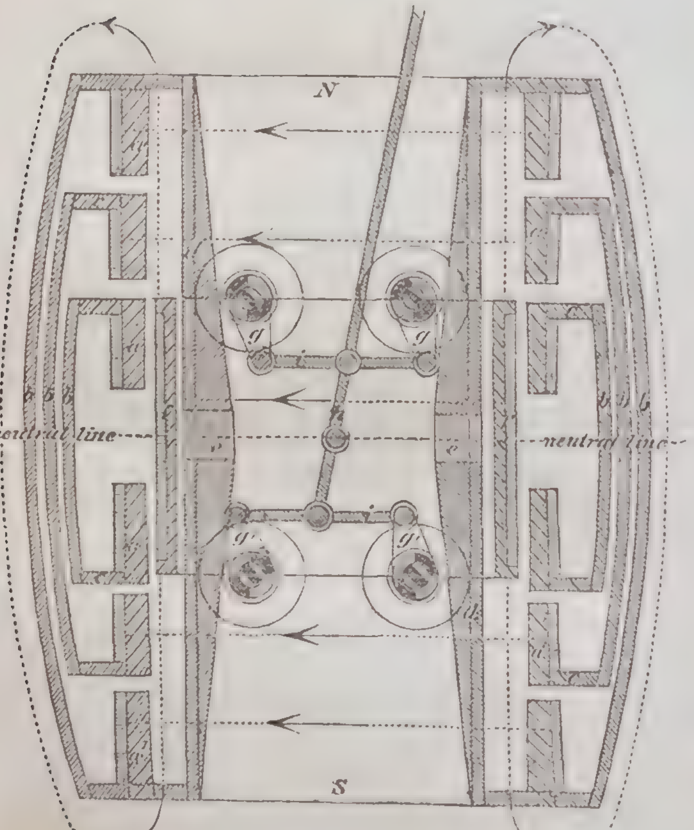
Working model of a patent electro-magnetic engine, with oscillating motion and four inches stroke. The peculiar features of this invention are, that any length of stroke with a direct pull, of a succession of polar extremities, extending to the whole periphery of the acting surfaces, can be produced, and that the destroying effect of the sparks is prevented; the power has been found to increase in a simple ratio to the diameter of the piston.

Wooden model of the same, of an improved construction, by which a stroke can be made of any length with only one magnet; one pole consisting of three coiled rings fixed to two plates, and the other of a single ring likewise coiled, forming the piston, the motion of which is guided by rollers; the rollers at the same time serve as a means by which magnetic contact is established between the piston and the stationary part of the magnet. The model represents a vertical section of the arrangement, and it will be seen that it allows any length of stroke, with an unlimited extension of the diameter of the pistons.

The following is a description of the improved electro-magnetic arrangement, represented in plan and section in the accompanying drawing. This arrangement consists of only one hollow electro-magnet, the respective poles of which are divided in three square rings, $a\,a\,a$ and $\acute{a}\,\acute{a}\,\acute{a}$, being conical inside and outside, connected with the bows b, by means of the cross pieces $\grave{e}\,\grave{e}$. From the top and bottom of this arrangement, extend from the said bows, *four* plates d, with ribs which are connected in the centre with corresponding brass-plates and ribs e. These plates are applied for guiding the motion of the piston f, serving at the same time as a means by which metallic contact may, during each stroke, be established and broken between it and one of the respective poles. Four pair of rollers are for this purpose placed inside the piston on hollow shafts, which are arranged each on the four-way principle, with a ring or cylinder, laid in with diamagnetic metal between the bearings and shafts, so that the magnetic part of the bearings may be brought in contact either with the similar parts of the rings, or the diamagnetic parts of the same. The required motion of the rings is produced by the cranks of $g\,g$ and $g'\,g'$, which are connected with the connecting-rod h by the smaller rods i, so that each pair of the cranks move in opposite directions. In the position represented in the drawing, magnetic contact is established between the north







pole and piston, the latter thus obtaining the same polarity as the north pole, will, of course, attract the south pole. When a down-stroke in this way is performed, the magnetic contact between the north pole and the piston is broken by turning the cranks *g g* in one direction, while similar contact is established between the south pole and piston by turning the cranks *g' g'* in opposite directions, and so on. While a reciprocating motion is thus obtained, the electric fluid moves, as indicated in the drawing, constantly in one direction round the piston and each of the poles without being broken, as the motion of the piston is reversed, merely by establishing and breaking magnetic contact. While the piston passes out of the one pole it enters the other, and induces action, according to the laws of the secondary currents, in opposite directions, serving thus to neutralize each other. As will be observed from the arrangement, the bows of the magnet branch off from each end of the same, like the meridians round the globe, forming, with the piston, which constitutes the axis of the magnet, a neutral point in the centre, like the equatorial line.

The object of this arrangement is:—

1. To obtain a stroke of any length with only one electro-magnet, the piston being a moveable extension of either of the poles, attracted by a succession of polarities, the acting surfaces of which extend to the whole periphery.
2. To arrange the piston so that it may be extended to any size, and at the same time may not be heavier than a piston in a low-pressure steam-engine of the same diameter. The power being expressed in pounds per square inch.
3. To prevent the destroying effect of the electric spark.
4. To neutralize the secondary currents, and prevent the reaction caused by the same.

[Electro-magnets are formed by coiling around soft iron bars, copper wire, which being connected with a voltaic battery induces magnetism in the iron, as long as a current circulates through the wire. By this means magnets, having the power of lifting many tons, have been made. The great difficulty in the way of the application of this power is the rapidity with which it diminishes through space. In the present instance this difficulty has been successfully overcome.—J. G.]

48 Hoy, Hans, *Copenhagen*—Manufacturer.
Mould for stearine candles.

49 ———, Madame, *Copenhagen*.
Bouquets of dried flowers.

50 Sandford, G., *Copenhagen*.
Patent steering apparatus.

51 Kyhl, H., *Copenhagen*—Manufacturer.
Small church-tower clock, with transparent dial-plate. The wedge and sloping form has been applied to the wheels, instead of the ordinary teeth. By this plan an equal rotation in the central line is produced, such as is only partially attained by the exicycloid shape of teeth. They are at the same time stronger, which makes them applicable to, and useful in, general mechanics. The going-wheel is made to have a direct action upon the pendulum, by the application of a free escapement.

52 Kittendorff & Aagaard, *Copenhagen*.
Specimens of chemical typography.

53 Eiler, L. M., *Copenhagen*—Inventor and Manufacturer.
Model of carriage, showing a plan for stopping a carriage, and for releasing and blindfolding the horses, in case of their running away.

RUSSIA

North and South Side, F. to K. 68 to 70; L. 70, 71; M. to R. 70; S. 70, 71.

Commissioner in London, M. Gabriel de Kamensky, 34 *Norland Square, Notting Hill.*

This extensive collection of articles has been contributed by about 380 exhibitors. Owing to the usual causes which interfere with the communications between this country and Russia, many of the articles, and those of the most beautiful and imposing description, were not received until after the opening of the Exhibition. A very complete series of objects is now exhibited, from the raw material to its elaboration into artistic form. The raw materials and produce constitute a very large part of this collection, regard being had only to the numbers of their representative exhibitors, amounting to upwards of 140. Of these, the metalliferous minerals, and the metals themselves, with various geological specimens of interest, form an important portion. From a number of the Imperial iron-foundries, specimens of the best productions of the Russian forges and furnaces are shown. There is, perhaps, no country in which metallurgical works, castings (by various methods), and the operations of the foundry, are carried on upon a more colossal scale than Russia. The establishments in which the processes are conducted being, for the most part, the property of and organized under the Imperial Government, are on a scale of corresponding magnitude.

In the first rank of the public establishments of Russia, the Imperial Mint and the Cannon Foundry must be placed. The former we notice in connection with the gold, silver, and platinum that appear in this collection, and are more especially noticed hereafter; the second, in illustration of the processes by which the enormous produce of Russian iron is prepared. The mint of St. Petersburg coins, annually, the quantities of money in gold, in silver, and in platinum that are required for the public service. The entire amount of the gold and platinum produced by Siberia is sent thither, in order to have the standard authenticated. There, too, in like manner, the gold contained in the silver ores of the Altai and the Nortchinst mines is extracted. The foundry and smelting-houses of Alexandrovsk, situated on the Neva, at some versts distant from St. Petersburg, are charged with the execution of whatever may be necessary for the works undertaken by the Government in that capital; but they also execute orders for private individuals. Several chemical substances of commercial value are also exhibited. The agriculture of Russia is represented by the specimens sent by about fifty exhibitors, which include all the varieties of wheat in common use in Russia, and exported thence to other countries. Of the vegetable substances used in the arts, as in dyeing, a good collection exists. And of those products, forming the basis of the textile manufactures, as flax and cotton and silk, many samples are shown. The extent and the importance of the flax productions of the empire are familiarly known, and the character of that fibre is well illustrated by the specimens sent for exhibition. The machinery exhibited includes a calculating engine, a silk-throwing machine, a patent machine for substituting mechanical for manual labour in cutting files, &c. The machines used in the Imperial Alexandrovsky manufactory of sail-cloth, near St. Petersburg, for the purpose of testing the tenacity of sail-cloth and other materials, will receive notice. A vacuum apparatus for sugar, a Jacquard loom, a table for washing gold sand, and other objects of interest, belong likewise to the department of machinery. The textile manufactures, including those of cotton, flax, silk, and wool, are illustrated by the productions of a considerable number of exhibitors; and the goods themselves offer an instructive comparison with those of other countries and with our own. The sail-cloth, a coarse canvas, and sheetings, exhibit the usual excellent qualities of Russian productions of this class. The celebrity of the manufacture of Russia leather attaches interest and value to the specimens of this article exhibited. In the department of the precious metals some beautiful and costly specimens are shown, inclusive of a display of jewels of great splendour and worth. The candelabra, also, form highly-attractive features in this collection. Probably, the greatest amount of interest excited by any series of objects, is that awakened by the superb suite of furniture in malachite and or-molu. The beautiful veining and colour of this green carbonate of copper, and the ingenuity exhibited in its arrangement into the forms required for the purposes to which it has been applied, render these articles extremely attractive to every visitor. The vases in jasper, of great size and value, form a scarcely less interesting group. In the department of fine arts, the beautiful applications of the electrotype process to the production of medallions and casts, and the medals in gutta percha commemorative of the Turkish and Persian wars, form a principal feature. Those interested in the art of producing beaten work will observe with attention a copy of the Warwick vase in hammered copper. The large porcelain vases are valuable specimens of the state of the ceramic art at St. Petersburgh.—R. E.

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1 Imperial Bogoslovsky Copper Works, *Government of Perm.*

Native copper, from Michael Archangel mine. Red oxide of copper, with green carbonate ore in compact limestone, from Soukhodoisk mine. Red oxide of copper, with green and blue carbonites of copper, from Michael Archangel mine. Red oxide of copper, in hardened clay. Tile ore (Ziegelerde), impregnated with native copper from Vassilievsk mine. Bituminous copper ore, from Frolovsk mine; also, spotted with green and blue carbonates of copper, from Michael Archangel mine. Earthy black oxide of copper in white clay, from Vassilievsk mine. Black oxide of copper, from Michael Archangel mine. Copper pyrites.

All these ores contain from 2½ to 7½ per cent. of copper.

Vitreous ore, with copper pyrites, impregnated with quartz, from Michael Archangel mine. Amorphous vitreous ore, from Vassilievsk mine. Vitreous ore, with calcareous spar, from Soukhodoisk mine. Vitreous ore, in white clay, from Vassilievsk mine; also, crystallized with copper pyrites, from Frolovsk mine.

All these ores contain from 13½ to 37 per cent. of copper.

Reniform malachite, with bituminous ore, in a decomposed state, from Frolovsk mine. Radiated malachite, from Soukhodoisk mine. Green carbonate of copper, with red oxide of copper, from Soukhodoisk mine. Blue and green carbonates of copper, and vitreous ore, from Bogoslovsk mine. Red clay, used for the repairing of furnaces. White refractory clay, used for preparing cement and fire-bricks; also for lining furnaces in the manufacturing of copper. Frolovsk sand, used for beds of furnaces. The different materials for the furnaces in the manufacturing of copper. The different products in the process of the refining of copper. Copper of a pale rosy colour, very malleable and ductile, contains about 35 lbs. of copper in 36 lbs. An assay of fine copper.

[The copper ores of the district of "Bogoslovsky" are found to the north of the smelting establishment of that name, in a locality called "Tourinsk," after the name of a river flowing in that vicinity. Beneath a bed of a calcareous transition formation, the primitive calcareous rock is discovered which contains the deposit of copper ores. Its direction is north-west and south-east, and its prolongation must be very considerable, because diggings that have been tried in many directions, and at remote distances from Tourinsk, have always encountered this as the predominating formation of that region. The subordinate rocks of this series consist of argillaceous talcose varieties, feldspar, amphibolite, &c. The ores of copper develop themselves in beds, in lodes, and nodules, which, in their direction and position, agree, in all conditions, with the direction and superposition of the usual beds of such deposits.

The copper mines of Bogoslovsky cannot fail to promise a prosperous future, and might become a source of far more considerable revenues than are at present realized from them, were those resources applied to their improvement that are now exclusively devoted to the search after, and working of, auriferous sands. Their treatment would be equally susceptible of modifications that might be introduced into them with regard to apparatus and machinery, quality of fuel, modes of consuming it, &c.—("*Annuaire des Mines*," vol. i., pp. 80-85.)]

2 Imperial Alexandrovsky Cannon Foundry, *Government of Olonetz.*

Iron ores. Limestone. Cast iron, for heavy guns.

[The mining district of Olonetz is situated in a very remarkable conglomerate of angular fragments of altered slate, with minute felspathic veins. The mines are at Petrozavodsk, on the shores of Lake Onega.—D. T. A.]

3 Imperial Artinsk Works, *District of Zlataoust.*

Specimens of cast steel, used for making scythes and saws.

4 Imperial Barnaoulsk Works, *District of Altaisk, Siberia.*

Silver ores from Zmeevsk mine, contains 1⅓ drams of silver in 36 lbs.; from Salairsk, 1¾ drams in 36 lbs.; from Zerianofsk, 12½ drams in 36 lbs.; from Sokolni, 4¼ drams in 36 lbs.; from Semenovsk, 2½ drams in 36 lbs.; from Ridersk, 1¾ drams of silver, and 1½ drams of lead in 36 lbs. Limestone. Lake salt. Fire-brick. Slags, and the different products in the process of refining the above-named ores. Fine silver.

[In the Altai, as in the Ural, traces are met with of ancient mining works that are attributed to that Finnish nation which passes under the generic appellation of the "Tchoudes." These traces have penetrated the soil in every direction, but the nature of the implements that were used by the earliest inhabitants of Siberia did not permit them to attempt breaking through the hard rocks, and they must have limited their efforts to the extraction of the softer ores from the delfs or quarries. Be this as it may, their workings have been long abandoned; and the very fact of their existence, even, was unknown to Europe, when Akenfi Demidoff, having ascertained, about the year 1723, that some Russian peasants settled on the banks of the Ob had found copper ores, caused that tract of country to be explored, and commenced some diggings there in 1726. These discoveries led, at a later period, to that of silver ores, and particularly to that of the celebrated mine of Zmeinogorsk or Zmeioffsk, worked, in the first instance, by Demidoff, who knew how to appreciate its value: it was repurchased by the Crown in 1747, and has remained Crown property ever since. From the date of its discovery down to 1835, this mine, originally very ill worked, seeing that in the commencement the workmen threw away all the poorer ores, has yielded 36,941 poods and 5 pounds of silver, containing 1,000 pounds of gold; and the whole of the mines of this circle have yielded an aggregate of 183,884,116 poods of ores, from which have been extracted 69,708 poods of silver, containing a quantity of gold estimated at 1,900 poods.

The discovery of other mines, among which must be noticed, in the first rank, those of Reddersk, Zerianofsk, Krioakofsk, &c., have contributed to replace the exhausted minerals of Zmeinogorsk, and to maintain, at the scale of about 1,000 poods, the annual production of silver in this circle or department.

The silver mines of this territory form four principal groups, situated at distances varying from 200 to 500 versts, respectively, from Barnoul in a N. E. direction, and S. and S. E. also, from that principal station. These groups are—

1. That of Salairsk in the chain that divides the waters of the Toor from those of the Ob.

In the chain of the Khebzoun—

2. The group of Zneiofsk.
3. That of Riddersk.
4. That of Zerianofsk.

Besides these, numerous ores are found in a region of porphyritic and schistous formation, which surrounds the western extremity of the chain of Khobzoun, and has for its boundaries the 77th and 80th meridians, and the 54th and 59th parallels. There is reason for believing that some of these deposits will turn out to be productive; but if, contrary to all probability, such should prove not to be the case, the argentiferous territory of the Altai is still sufficiently vast to warrant the anticipation of further fortunate discoveries.

The quantity of silver comprised in the ores, and ascertained in the mines, exceeds 60,000 poods. The investigations already conducted in the ancient workings seem to justify the expectation that this figure will, by actual results, be much surpassed.

Of eleven mines now in active working, those of Zerinofsk and of Krioakofsk offer the richest ores of this district; but the mean value of their contents, or production, does not exceed four zolotniks of silver per pood. The ores of Salairsk (the poorest of all) do not yield more than 68 parts (each $\frac{1}{96}$ of a zolotnik) per pood of ore.

Amalgamation by mercury, and the treatment of ore by the fire-method, are the only modes which, up to the present time, have been resorted to for extracting the silver from the ores that contain it. But this last process is modfied according to the mineralogical nature of the ores and that of the rocks in which they are found; and they reckon as many of these modifications as there are known mineral beds. The method of treating the ores in Lower Hungary, which have a close relation with those found in the Altai, must necessarily attract the attention of the Russian mineralogists when it shall become a question how to derive the utmost advantage from the ores of silver found at the Altai; and it is precisely this analogy, therefore, which has caused a preference to be given to the Hungarian method over the methods adopted in Saxony, the Hartz and Sweden. These processes have, for a long time, led to successful results; but the progressive increase of the waste of metal which they entail has caused the urgent necessity to be appreciated for the adoption of such modifications as seem to be demanded by the successive impoverishment of the metal, and the disposition of the substances that favour their treatment.]

5 IMPERIAL CAST IRON WORKS OF KOUSHVINSK,
Government of Perm.

Pig iron, used for the manufacturing of wrought iron, and for different castings.

6 IMPERIAL COPPER WORKS OF PERM,
Government of Perm.

Rocks of the Permian system of Sir Roderick Murchison:—Marly sandstone, penetrated by vitreous copper ore, and green carbonate ore; from the Novobershetsk mine; contains about 12 per cent. of copper. Granular marly sandstone, with the impressions of plants, penetrated by the green and blue carbonates of copper, and covered by vanadiate copper, from the Sviato-Troitsk mine, contains about 2½ per cent. of copper. Another of dark-red colour, penetrated by green carbonate ore, from the Voskressensk mine, contains about 2 per cent. of copper. Grey marly sandstone, with fragments of clay, penetrated by green and blue carbonate of copper, and covered with vanadiate copper, from the Voskressensk mine, contains about 2 per cent. of copper; also, with the impressions of leaves, penetrated by green carbonate of copper, from the Czarevo-Nicolsk mine, contains about 3 per cent. of copper.

Marly clays—Black-grey, with disseminated particles of vitreous copper ore, from Rijevsk mine, contains about 1½ per cent. of copper; another, grey colour, penetrated by green carbonate of copper, with impressions of the plant *Sphenopteris furcata*, from the Novobershetsk mine, contains 1½ per cent. of copper. Coloured with hydrate of iron, and penetrated by blue and green carbonates of copper, from the Pokrovsk mine, contains about 1½ per cent. of copper. Penetrated by green carbonate of copper, with an impression of the plant *Cheilantites cuneifolia*, from the Voskressensk mine, contains about 2 per cent. of copper.

Grey marly sandstone, with fragments of clay, penetrated by green carbonate ore, with impressions of the plant *Sphenopteris furcata*, from Sviato-Troitsk mine, contains about 1½ per cent. of copper.

Small-grained marly sandstone, penetrated by green carbonate ore, from Czarevo-Nicolsk mine, contains about 2 per cent. of copper.

Decomposed dolomite, known as Gelinsk sand, used as the flux in the smelting of all the Permian ores.

The different products in the process of refining copper.

Copper in ingots—contains 99 per cent. of pure metal—is used in coining; and copper in ingots, which is afterwards rolled into sheets.

Sheet-copper, used for making percussion-caps.

Nerinsk quartz, for covering the hearths of furnaces for smelting copper ores.

Nerinsk white refractory clay, for making fire-bricks.

Fire-bricks in their different states previous to, and after having been in use.

Compound materials used for the furnaces in the smelting of copper ores.

[The rocks of the Permian series (intermediate in geological position between the new red sandstone and the coal measures) occupy the centre of a vast trough of carboniferous rocks on the flanks of the Ural mountains; and although very obscurely shown on the western side of this basin, they are gradually more and more manifest on advancing eastwards, and are seen on the banks of several rivers to the east of the city of Perm; the oldest beds being those which are here exposed. The beds here consist of finely-laminated calcareous flagstones, with gypseous concretions, and pass upwards into calcareous grits, sandstones, marls, and conglomerates, and sometimes into shales and flagstones containing plants, with a little coal.

Perhaps the most remarkable and characteristic peculiarity of these rocks, especially of their lower members, consists in the abundance of gypsum present; and, as happens in most formations in which gypsum abounds, the lithological variations are considerable in very short distances. In this way, it becomes difficult to trace continuous beds, and the difficulty is greatly increased by the rarity of fossils.

The limestones, flagstones, and gypsum, thus abundant to the east, are replaced in the west by cupriferous grits, which have been extensively worked in many places; the ores of copper, chiefly the green carbonate, being disseminated at intervals throughout all the beds. The proportion of ore, however, is small, not exceeding 2½ per cent., and it is frequently found arranged in the interstices, and around the fossilized stems and branches of plants. Rock salt and brine springs are found in some districts, where the surface is covered with Permian rocks; but it is doubtful whether some of the salt sources in these latter cases are derived from the Permian or the underlying carboniferous series.—D. T. A.]

7 IMPERIAL GOROBLAGODATSK IRON WORKS, *Government of Perm.*

Magnetic iron ore, from Blagodatsk mine—contains 73 per cent. of iron; the same, roasted.

[The metallurgy of iron is conducted on the largest scale at Goroblagodatsk. The mountain thus named, and at a distance of three versts from which the smelting-works of Konschwinsk have been erected, is a rock of amphibolic porphyry, in which we find injected an enormous quantity of the magnetic iron mineral, sufficiently rich to give 60 per cent. of the metal. Other great deposits of iron are worked in the same district, and the product is mixed with the Blagodatsk ores in order to render them more fusible. No less than 1,500,000 poods of iron mineral are annually treated in this particular district. The establishment at Kaminsk, one of those at which iron is smelted within the department of Ekaterinburg, is fed by the mines that furnish the oxide of hydrated iron, containing fragments of copper of the same metal. In this locality hematite is also met with. The matrix (*gangue*) is a primitive calcareous formation, accompanied with fine crystallizations of carbonated chalk, embedded in the cavities of specular iron. The ores of Kaminsk are fusible, and do not contain sulphurus pyrites. There are extracted of these ores about 500,000 poods annually; but their yield does not exceed 30 per cent.]

Brown iron-stone, from Balakinsk mine—contains 52·60 per cent. of iron; and roasted.
Brown iron-stone, from Levinsk mine—contains 70·50 per cent. of iron; and roasted.
Brown iron-stone, from Kedrovsk mine—contains 67·38 per cent. of iron; and roasted.
Brown iron-stone, from Nijne-Tourinsk mine—contains 42·996 per cent. of iron; and roasted.
Limestone, used as a flux in smelting iron ores.

[The magnetic oxide of iron obtained from Blagodat, near Nijny Tagilsk (North Ural), occurs in large patches on the summit and slope of a hill, and in a valley on the western side of the same hill (Vissokaya-gora). It is now quarried in this valley: an enormous body of the ore, rudely bedded, and traversed by numerous joints, being exposed by great works along a face which, including the useless overlying materials, has a height of nearly 100 feet, and a length of several hundred feet. The origin of this ore is doubtful, but it appears to be harder, and more crystalline than usual, in immediate contact with the greenstone which contains it, and may thus be regarded as at least intimately connected with what is usually recognised as igneous action.—D. T. A.]

[M. Erman has also published valuable notices of the localities in which these mineral products are found, and of the processes used in smelting and reducing them:—"At Nevansk, the ore is procured at a short distance from the furnaces, where a shining mass of red ironstone appears just at the surface of a bed of clay, the colour of which varies from green to yellow. This bed is cut by a seam of variegated limestone, running in the direction of the Grand Uralian range, and in contact, on either side, with a somewhat loosely schistose serpentine. . . . . The smelting-houses here obtain a supply of ore from Nijny Tagilsk, also of a peculiar sort of magnetic ironstone. It is distinguished by the remarkable crystalline structure of its gneiss, which are agglomerated in irregular dodecahadrons of the diameter of 0·8 or 1·5 lines. It is understood to require a sharp roasting before it goes into the smelting furnace, otherwise it collects into lumps without being reduced, and layers of unsplit pine-wood are usually intermixed with it when roasting. These layers are continued, alternating about every 3 feet and a half with the layers of ore which are 7 feet thick, until they reach a height of 35 feet upon a surface of 2,500 square feet. A cruciform opening is left in the pile of wood for the passage of air, and the entire is well secured with a strong framing of timber. Whole forests of timber are set apart for this extravagant, and perhaps unnecessary, operation; for the magnetic properties displayed by the iron after this process even prove that the oxidation can have been, after all, but imperfect. In the production of the ordinary crude iron, the Tagilsk and Nevgansk ores are smelted together with an admixture of sand and ferruginous clay; but Nevgansk is found to offer the best material for cannon and balls, as the magnetic ironstone of Tagilsk furnishes metal too hard for such purposes. In this case, the crude iron is smelted a second time with a portion of lime."]

8 IMPERIAL KAMINSK IRON WORKS, *Government of Perm, district of Ekaterinburg.*

Ore Melnikovsk (brown clay iron-stone), contains about 50 per cent. of iron.
Ore Razgouliaevsk, contains 50 per cent. of iron.
Ore Novikovsk, contains 28 per cent. of iron.
Limestone. Silica. Quicklime. Slags.
Hard cast-iron, used for casting, and for making wrought iron by the French method.
Strong, or close-grained cast-iron, for heavy guns.
Soft grey cast-iron, used for casting shot and shells, and for making wrought iron by the French method.

9 IMPERIAL KOUSSINSK IRON WORKS, *Government of Perm, district of Zlataoust.*

Stone that resists the fire. Fire-brick.
Brown iron-stones, from Akhtensk mine; and from Nijne-Kissegansk mine; raw and roasted.
Limestone, used as a flux.
Slags from iron furnaces.
Cast-iron, used in the manufacture of shot and shells.
Prepared iron, for anvils. Fibrous iron, manufactured by the French method. Large-grained wrought iron.

[The blowing machines for furnaces employed in the Ural are all of them of the kind which is called a piston, and of simple contrivance. A shaft moved by hydraulic power sets in motion an apparatus which alternately raises and depresses some iron cranks, a lever of wood, or of cast-iron, suspended by its centre of gravity; to one of these cranks is adapted a disc of solid iron, which at each descent of the crank expels the air enclosed in a cylinder of the same metal, from whence it escapes (through a valve inserted near its base) to supply a reservoir fixed near the machine; from hence a pipe, terminating in an orifice of a round or an elliptical form, and inserted into the main furnace through the air flue, serves to pour in the compressed air, which excites and animates the combustion. This sort of machine acts very efficiently, and does not often require repairing. The great furnace at Kaminsk is supplied with one of four cylinders, through which 2,880 cubical feet of air per minute are compressed and poured into the reservoir, as above described.

The motive power for these blowing machines and their various apparatuses is, in the Ural works, exclusively hydraulic, by the compulsion of water-wheels, driven by falls of water from greater or less heights. The "hammers" for breaking the ores are fixed in these works by what are called "*Ordons à drome;*" they are of cast-iron, and usually of six or eight poods weight each.

The staff employed for one of these principal furnaces, &c., is composed of—

2	Masters.
2	Helps (aides).
8	Ordinary labourers.
8	Labourers for disposing and preparing the charges.
4	Labourers for carrying the charges to the furnace mouth.
3	Labourers for carrying away the scoriæ, the pig, and run metal, &c.
2	Labourers to attend the blowing machines.
29	in all.]

10 IMPERIAL IRON WORKS OF NIJNE-TOURINSK.

Bar-iron, used chiefly for the manufacture of muskets, prepared by the French method; also made by the open fire. Sheet-iron.

Boiler-plate iron, manufactured for the naval department.

[The processes of iron-plate making deserve a particular notice. The making of iron-plates here is carried to great perfection. The rollers used are not formed by the lathe, but cast at once with the requisite smoothness and regularity in moulds, rubbed over with graphite, which are bored at Verkhnei Turinsk. While the plates are undergoing the operation of rolling out, particular care is taken that the edges be kept free from gaps by paring them with large shears. They are then placed on layers of from 10 to 20 on an ingeniously-contrived moving bench, which passes them to and fro under a hammer of 40 poods' weight, by which both sides are alternately exposed to its action, whilst a man carefully brushes off the scales that are continually produced on the surface. The black iron sheets have been long applied to the manufacture of a great variety of utensils, besides being used in covering the roofs of houses, as the excellent quality of the metal enables it to assume any degree of tensity. Plates, or *arshine*, 28 inches in breadth and 2 in length, will sometimes weigh not more than 2¾ lbs. The parings from the edges were formerly worked up into Uklad steel, as it is called; but now they are mixed with half their weight in charcoal and converted into bar-iron. This is a saving of a tenth of the iron, so that the entire loss in the production of sheet-iron is only $\frac{14}{100}$ to $\frac{15}{100}$ lbs. The sheets used for covering houses usually measure two square *arshines.*]

11 IMPERIAL IRON WORKS OF VERKHNE-BARANTCHINSK.

Rolled iron of different forms and dimensions; prepared by the French method.

12 IMPERIAL IRON WORKS OF VERKHNE-TOURINSK.

Pig iron, obtained from the mixture of magnetic ore with brown iron-stone; used only for the casting of heavy guns.

13 IMPERIAL IRON WORKS OF VOTKINSK, *Government of Viatka.*

Puddling-iron of various sizes, manufactured with charcoal, and only once worked; also doubled up, welded, and rolled, of various sizes; boiler plate; the same process thrice repeated, of various sizes. Iron prepared in open forges, and rolled, of various sizes. Sheet iron and boiler plate, made by the same process. Cemented steel, manufactured from scrap iron. Cast steel, manufactured from the above, and rolled.

[M. Eversmann has thus described these works visited by him, and subsequently by Mr. Erman:—"On approaching Votka, or Viatka, through the villages of Rossalin, Polosova, and Kilchi, all inhabited by Russians, the ground sinks rapidly near that place, and the traveller becomes aware of the elevation of the country which he has left. The iron works of Votka, belonging to the Crown, are situate at the junction of two small streams which, united with the Siva, run into the Kawa, about twenty versts lower down.

The raw iron procured at Kushva, on the eastern slope of the Mal (in lat. 58° 16′ 32″ N.), may be carried down by an uninterrupted water communication to Votka, a distance in a straight line of 224 geographical miles: first it goes westward down the Chusonaya, then southwestward down the Kama, then about seventy miles, or five times the direct distance, against the streams of the Siva and Votka, into the pond at the factory, which is made by damming up the two rivulets, and the water of which serves to drive some overshot wheels.

At the smelting-houses at Votka there were living in 1812 a population of 6,000 souls, which would be increased, however, to double that number if we were to add the inhabitants of the villages belonging to the district. Fourteen smelting-furnaces, with a corresponding number of hammers and various other machinery, serve to prepare the iron used for the artillery. But, besides these, ships' anchors, and iron pots or crucibles for melting the silver in the Mint at St. Petersburg, are wrought at Votka in the most perfect manner.

Anchors weighing from one to five tons are made of bars welded together, and experience has led to a result which is theoretically very interesting, namely, that in order to give the shaft and arms of the anchor the greatest possible tenacity, the outer bars alone must be welded together in perfect continuity, the inner ones being left more loosely combined. The lighter anchors are delivered at St. Petersburg at the price of about nine roubles the hundred-weight, including cost of carriage. Those of great weight are relatively cheaper.

The forging of the iron crucibles in Votka is a remarkable operation, the largest of them, weighing 23 cwt., were capable of melting at once 100 to 4,000 poods of silver.]

14 IMPERIAL MANUFACTORY OF FIRE-ARMS OF ZLATAOUST, *Government of Orenburg, district of Zlataoust.*

Raw steel, used for making the reforged refined steel. Blister steel, used for manufacturing different tools. Twice reforged steel, used for manufacturing sword-blades. Cast steel, used for file-cutters, chisels, blades, surgical cutlery, and dies for stamping coins. Damasc steel, manufactured in small quantities, for ornamenting Asiatic weapons. Cast Damasc steel, of a superior quality, for the above use.

[The department of Zlataousk possesses three smelting-works for the treatment of iron ores. The ore of seven large deposits in the vicinity of Zlataousk contains oxide of iron, either in the mass or in nodules, alternating with mica-schist, stea-schist, &c., in a bed of granite. This ore is very rich, yielding from 50 to 60 per cent. of metal.

Zlataoust is described as being the great centre of the iron and steel manufacture of Russia, and as exhibiting very high progress in the arts. The steel here manufactured is very celebrated, and is of the finest kind, being not only extremely elastic, but of great hardness. Major Abbot (of the H.E.I.C. Artillery) has said, in his Narrative of a Journey from Heraut, &c., "It may be doubted whether any fabric in the world can compete with that of Zlataoust in the production of weapons, combining in an equal degree edge and elasticity."—D. T. A.]

15 **Imperial Mining Works of Poland.**

Brown iron-stone, contains 28 per cent of iron, and 30 per cent. Marly iron ore, contains 21 per cent. of iron. Cast-iron, prepared with charcoal, for casting; also for making bar iron; and, prepared with coke, for the above use. Rolled iron, of various sizes. Medium sheet-iron. Sheet-iron for roofing. Common wrought-iron. Tin. Calamine. Zinc; also in sheets. Cadmium. Cadmium pyrite.

Specimens of rails, after Mr. Vignolles' system. One mile of railway between Warsaw and Vienna is made with these rails.

Iron screw, with brass nut.

Iron-work for gun carriages.

[Several metals and minerals are found in the hilly regions of Poland, the iron occurring in large quantities in the country about Olkusz and Kielce in Cracow, and Konskie in Sandomir. The kind of ore is generally the brown, or hydrous oxide, containing, when pure, about 56 per cent. of iron, but generally mixed with various foreign matters. The iron made from it, by the assistance of charcoal fuel, is good, but expensive. The tin ore occurs only in small quantities. Zinc is found abundantly, chiefly in the form of calamine (carbonate of zinc), and in the southern part of the country. A large quantity of zinc, manufactured in Poland, has been introduced into England. Cadmium is very generally associated with the common ore of zinc (calamine), both in Poland and Silesia, and in the proportion of from 2 to 10 per cent. It has recently been brought into use as a valuable material for preventing the oxidation of iron. The sulphuret of cadmium (*Cadmium pyrites*, or Greenockite) has been found also in England.—D. T. A.]

16 **Imperial Nijne-Issetsk Works,** *Government of Perm.*

Iron for musket barrels, prepared by the French method. Sheet-iron, for roofing houses; and boiler plate-iron, similarly prepared.

17 **Imperial Satkinsk Iron Works,** *District of Zlataoust.*

Soft cast-iron, from blast furnaces. Brown iron-stone, from Klutchevsk mine, contains 50 per cent. of iron; the same roasted. Ochry ore, from Bakalsk mine, contains 45 per cent. of iron; the same roasted. Lime sand, used as a flux in the iron furnaces. Slag, from blast furnaces. Bar-iron, prepared by the French method, for the manufacturing of fire-arms. Sheet-iron, used by the artillery department. Boiler-plate iron, manufactured for the naval department.

18 **Imperial Works,** *Government of Tomsk, district of Altaisk.*

Samples of cast and damasc steel.

19 **Iron Works of Khamounitsky (Ponomareff,** Madame, Proprietress), *Government of Viatka, district of Slobodsk.*

Iron manufactured by the French, or Catalonian processes, with charcoal. Sheet-iron of various sizes. Oxidized iron, 1 cwt. Boiler-plate iron.

19A **Imperial Alexandrovsk Manufactory,** *near St. Petersburg.*

Steeped flax from Pskoff, 1st quality; spread flax from Melenkoff, 1st quality; from Velikoselsk, 2nd quality; and from Poletzk, 1st quality. Tow, from steeped flax of Pskoff, 1st and 2nd quality; from spread flax of Melenkoff, 1st and 2nd quality; of Velikoselsk, 1st and 2nd quality; of Poletzk, 2nd quality.

21 **Demidoff,** Messrs., *Nijne-Taghilsk, Siberia*—Proprietors. Agents in London, Henry Hall & Co., Fenchurch-street.

Old sable iron; fibrous iron. Iron prepared in the open-forge fires, and in the French method, of various sizes. Puddling-iron; scrap and boiler plate, cast from the blast furnaces; sheet, dyed with colour of malachite. Cast-iron, from the reverberatory furnace. Forged steel. Spring steel. Cast steel. Cemented steel. Magnetic iron ore; the same, roasted.

[At Tagilsk the smelting-furnaces, with their dependencies, occupy a space of five square versts. A stone church and the residence of the proprietor stand on an eminence of greenstone, while the forges and dwellings of the workmen stand from the river to the foot of the hill on the westward, called Cisaya gorà. Both copper and iron are worked at Tagilsk. Besides this establishment there are eight others in the district belonging to the family of Demidoff, who own six smelting-furnaces and several forges. The ores are roasted here before smelting, as at Nevgansk, though consisting principally of magnetic ore and brown ironstone, with occasionally a slight admixture of iron pyrites. The furnaces will sometimes contain 800,000 poods each, and as one cubic square of pine wood is required for 4,000 poods of ore, the temperature of the mass in the operation of roasting may be calculated to be raised to 2340° (R.); but as, even then, the ore remains decidedly magnetic, properties of ironstone are less easily destroyed by heat than those of steel. Still, as 320° (R.) produces a loss of two-tenths of its intensity, it would follow that, at the temperature it might possibly reach in the furnace, all traces of magnetism would disappear.

In the South Ural works heat is economised by passing the flame issuing from the smelting-furnaces over the horizontal layers of the ore, as prepared for roasting; it is then conducted through a chimney of 30 feet in height, on which it deposits the minute particles of ore carried off by the revolving columns of smoke, in spiral ridges, which have a most illusive resemblance to the tubular hæmatite found in nature, and furnishes another instance of the analogy between the products of the smelting-houses and several fossils deposited upon fissures in the earth.

The proportion of the magnetic to the brown iron ore, as used here for gun-casting, is five to four; while crude iron, for other purposes, is smelted from the pure magnetic ore, and receives, besides, the twentieth of its weight of fusible spath from the west of the Ural. The average daily produce of metal from each furnace is about 17,500 lbs. Prussian, or fifty-three hundredths of the entire ore used. The furnaces are about 35 feet high, and 14 feet in diameter at the widest part.]

Malachite; also, reniform and polished specimens. Red copper ore. Phosphate of copper. Black copper ore. Copper in ingots, cakes, and sheets. Native copper. Tin.

Specimens of rocks, found in auriferous and in platina sands. Malachite colour.

[The poor ores of copper from the Permian rocks near Bogoslovsk have been already alluded to in a former note, but we may here notice those remarkable accumulations of malachite (green carbonate of copper) which have long been celebrated, and which, till the discovery of similar ore to a large extent in South Australia, was almost exclusively obtained from this district. The richest and finest masses of malachite seem to have occurred about 100 miles south of Bogoslovsk, but amongst similar igneous and altered rock to that of Frolovsk, where also there is a considerable quantity. The malachite occurs in openings between a garnet rock and limestone, and exists generally in masses. The mineral itself has every appearance of having been formed by a cupriferous solution depositing its residue in a stalagmitic form, exactly as is known to occur with carbonate of lime in caverns. The external surface of the concretions is frequently covered with a black oxide of manganese, which falls off when touched. To give some idea of the magnitude of such masses as have been found in Russia, we may refer to the account of a lump discovered at Nijne Taghilsk, a few years ago, at a depth of 280 feet. Sir R. Murchison thus describes it:—"Thin strings of green copper ore occurring at intervals were followed downwards, when, increasing in width and value, they were found to terminate at the base of the present mines, in an immense irregularly-shaped botryoidal mass of solid malachite, the base of which had not been traced." The summit of this mass is described as being 18 feet long and 9 feet wide, and the whole of the surface uncovered at the time of the visit of our countryman in 1843, was calculated to contain not less than half a million of pounds-weight of pure and solid malachite.—D. T. A.]

22 SPECIMENS of MINERALS found in NEW RUSSIA and BESSARABIA, and in the TRANS-CAUCASIAN PROVINCES.

Gneiss. Syenite. Syenitic Gneiss. Fine-grained Syenite. Diorite. Feld-spar. Lamellated calcareous spar. Large-grained and fine-grained granite. Granite-syenite. Fine-grained granite, in a state of transition to gneiss. Pegmatite. Sulphureous lead. Compact quartz. Porphyry. Dioritic slate. Greenstone, approaching to basalt. Jasper. Crystals of amethyst. Hornstone. Petrified wood. Semi-opal. Limestone. Compact limestone (statuary marble). Marble from Balaclava. Oriental alabaster. Breccia. Red breccia. White clay, employed at the foundry of Loogane, for firebricks. Porcelain clay. Marble. Dolomite. Mass of calcedony, containing gryphites. Radiated and red obsidian. Red Tuff. Manganese, red copper ores, and magnetic iron. Purified and crude soda. Mineral salt. Black Naphtha. Coals from Khoomarin, Tabassaran, and Tkwibool. Anthracite from Grooshoff, clay of the Crimea, (called *kill*).

23 PASHKOFF, ALEXANDER, *Government of Orenburg, district of Sterlitamatsk*—Proprietor.

Copper in ingots.

24 PASHKOFF, MICHAEL, *Government of Orenburg, district of Sterlitamatsk*—Proprietor.

Copper in ingots, in cakes, and in sheets.

25 JAKOLEFF, Madame CATHERINE, *Government of Riazan, estate of Grishino*—Proprietress.

Samples of steel.

26 HIRSHMANN & KIJEVSKI, *Warsaw*—Manufacturing Chemists.

Chemical productions:—Blue, green, and white vitriol; alum, prussiate of potash, also of a red colour, chloride of lime, flour of sulphur, and sugar of lead.

Colours:—White and brown-red lead, Parisian and Bremen blue, Schweinfurt, imperial (*Kaiser grün*), and mountain (*Berg grün*), greens.

27 SCHLIPPE, CHARLES, *Government of Moscow, district of Vereisk, estate of Plesninsk*—Manufacturing Chemist.

Prussiate of potash. Alum. Muriate of tin. Oxalic acid; tartaric acid. Vinegar. Leiokom (stannate of soda.)

28 SANIN, —, *Government of Kaluga*—Manufacturer.

Sugar of lead. Vert de terre. Vert de gris. Blue vitriol. Alum.

29 BRUSGHIN, ALEXANDER, *Koselsk*—Manufacturer.

Prussiate of potash.

30 VERDAN & Co., *Moscow*—Manufacturers.

Leiocome. Dextrine. Lustrine. Albumen. Starch.

31; 101 KARNOVITCH, —, *Government of Jaroslaff*—Proprietor.

Flax, prepared after the Flemish method. Rape-seed.

32 KOUCHELEFF, Count, *near St. Petersburg, estate of Ligovo*—Proprietor.

Ears of corn:—Winter and spring rye, spring wheat, polba (spelt-wheat), barley, oats, buck-wheat, millet, tares, flax, clover, and Timothy grass.

Corn:—Winter and spring rye, spring wheat, polba, barley, buck-wheat, and millet.

Flax, clover, tares, timothy grass, rye grass, pearl barley, and hops.

33 LOSHKAREFF, —, (Peasant), *Government of Simbirsk*—Producer.

Samples of wheat.

34 HIRSHMANN, —, *Government of Lublinsk, district of Sedletsk, estate of Sokolovo*—Proprietor.

Phormium tenax (New Zealand flax). Large-eared wheat. Rye.

35 KLEPATSKY, —, *Government of Kharkoff, district of Koupiansk*—Proprietor.

Spring wheat (called *arnaoutka*).

36 DOKHTOUROFF, —, *Government of Toula, district of Kashirsk*—Proprietor.

Prepared manna buck-wheat. Fine pearl barley. Fine groats.

37 COSSACKS of the AZOFF SEA, *Territory of the Don Cossacks*—Producers.

Blue-eared spring wheat (called *boolgarka*), in sheaves and in grain. Black-eared spring wheat (called *boolgarka*), in sheaves and in grain.

38 MOROZOFF, —, (Peasant), *Government of Kostroma, estate of Korobeinikoff*—Producer.

Wheat (called *belotourka*).

39 BAGUER, —, *near the town of Kertch*—Proprietor.

Specimens of hard wheat, called Arnaout.

40 MATVEIEFF, — (Peasant), *Government of Orel, district of Eletz*—Producer.

Samples of prepared buck-wheat.

41 SCHOOL OF HORTICULTURE, *Bessarabia*.

Specimens of Indian wheat.

42 SHABELSKY, —, *Government of Ekaterinoslaff, district of Rostoff*—Proprietor.

Samples of hard wheat, (called *arnaout*).

43 TRESKOFF, —, *Government of Warsaw, district of Gostindsk, estate of Khodove*—Proprietor.

Specimens of wheat (called *sandomirsk*).

44 Vielhorsky, Count Matthew, *Government of Penza, estate of Znamensk*—Proprietor.

Sample of corn, "Vielhorka."

[It has been stated upon competent authority that in no other country in Europe can corn be raised at so small an outlay of labour as in Russia. This appears to be due to the light and friable character of the soil, which, while it yields a large return to the husbandman, is readily subdued by the simplest instruments, and fitted for the reception of the grain. A quantity greatly exceeding the home consumption is annually raised in Russia, and forms an important article of export commerce to other countries, and to our own. More than four hundred thousand quarters of wheat are received annually by the United Kingdom from Russia.—R. E.]

45 N. N., *Government of Kharkoff, district of Zmievsk.*

Specimens of Swedish and Himalayan barley.

46 Bistrom, Baron, *Government of Courland, district of Mitaw, estate of Patzen*—Proprietor.

Samples of pearl barley.

47 Ropp, Baron, *Government of Courland, estate of Bixsten*—Proprietor.

Samples of pearl barley.

48 Rekke, Augustus, *Government of Courland*—Proprietor.

Samples of pearl barley.

49 Ratshinsky, —, *Government and district of Smolensk*—Proprietor.

Specimens of Smolensky grits.

50 Vladimirsky (Peasant), *Government of Novgorod*—Producer.

Samples of grits of unripe rye.

51 Zilfoogar-Beck, & Iskander-Beck-Ogli, *Government and district of Shemakha, village of Matchakhi*—Producers.

Specimens of native rice (*Chaltick*). Chaltick grits.

52 Selivanoff, —, *Government and district of Penza, estate of Koutchouk-Portch*—Proprietor.

Samples of oats.

53 Volkonsky, Prince M., *Government of Jaroslaff, district of Mologsk*—Proprietor.

Samples of oats.

54 Ounkovsky, —, *Government of Novgorod, district of Tikhvinsk, estate of Paneff*—Proprietor.

Samples of oats.

55 Safonoff, A. E., *Government of St. Petersburg, district of Shlisselburg, estate of Kiritsk*—Proprietor.

Specimens of spring rye.

56 Bobrinsky, Count Alexis, *Government of Toula, district of Bogorodsk, estate of Mikhailovsk*—Proprietor.

Specimens of winter rye.

57 Khalil-Beck Saphieff, *Government of Erivan, district of Sharoor, village of Bashoorashen*—Producer.

Samples of rice. Rice grits. Native rice (called *chaltick*). Chaltick grits.

58 Agricultural Society of the Caucasus, *District of Erivan.*

Samples of rice.

59 Pousanoff, —, *Government of Koursk, district of Stchigrovsk, estate of Nikitsk*—Proprietor.

Specimens of millet; and black millet.

60 Ershoff, —, *Government of Saratoff, district of Kamishinsk*—Proprietor.

Samples of wheat (called *koubanka*), and millet.

61 Gooriel, Prince Levan, *Government of Cootais, district of Ozerguet*—Proprietor.

Specimens of Caucasian millet (called *gomia*).

62 Miagkkoff, —, (Peasant), *Government of Jaroslaff, district of Rostoff, estate of Ugodino*—Producer.

Samples of green peas.

63 Khokholkoff & Gregorieff (Peasants), *Government of Jaroslaff*—Producers.

Samples of green sweet-peas.

64 Golovanoff (Peasant), *Government of Olonetz, district of Poudojsk, estate of Sartchevsk*—Producer.

Specimens of wheat flour.

65 Manin, —, *Government of Olonetz, district of Vitegorsk*—Merchant.

Samples of Polish manna. Finest wheat-flour.

66 Roussanoff, — *Government of Orel, district of Eletz*—Merchant.

Specimens of finest wheat flour.

67 Sapojnikoff Brothers, *Government of Saratoff*—Merchants.

Samples of wheat flour.

68 Nikitin, —, *Town of Smolensk*—Confectioner.

Dry preserved fruit.

69 Sorokin, Catherine, *Government of Jaroslaff, near the town of Rostoff*—Proprietress.

Succory coffee.

70 Volkonsky, Prince V., *Government of Tamboff, district of Shatzk*—Proprietor.

Starch-gum.

[Starch-gum is well known in England under the term British gum. The name is improperly applied, as the substance indicated is not a gum, in the sense in which that term is applied to the exudations of trees. Starch-gum forms a mucilage when mixed with water, but it is in no other respect comparable to gums, such as gum-arabic. It consists in its ordinary state of a powdery mass of torrefied granules of starch. It is made for commercial purposes in large quantities, by heating potato or other starch to a temperature of 400° Fahr. In this act the membranous envelope is burnt, and the grains become soluble in water. It may also be prepared by a chemical process. It is known to chemists under the term *dextrine.*—R. E.]

71 Roterman, Christian, *Reval*—Manufacturer.

Wheat-starch.

72 Yurghenson, —, *Government and district of Novgorod, estate of Marieno*—Proprietor.

Potato-starch.

73 Mikirtitcheff, Carapet, *Government of Erivan, district of Soormaline, village of Amaret*—Producer.

Seeds of the castor-oil plant (Ricinus). Lucern seeds. Seeds of the sesamum.

74 Heirs of Treskoff, *Government of Warsaw, district of Gostindsk, estate of Streltze*—Proprietor.

Turnip-seed.

75 Mustapha, Eyderoff, *Tiflis, district of Bertchalin*—Producer.

Turkish tobacco.

76 Spiglazoff, Alexis, *St. Petersburg*—Manufacturer.

Samples of tobacco, cigars, and snuff.

77 Doodinsky, —, *Government of Shemakha, district of Lencoran*—Proprietor.

Maryland and Havannah tobacco.

78 Sangoushko, Princess Mary, *borough of Shepetovka, Government of Volhynia, district of Sasslav*—Proprietress.

Beet-root sugar.

79 Hirshmann, Hirshendorff, & Ravitch, *Government of Lublinsk, district of Sedletsk, estate of Sokolovo*—Sugar Refiners.

Raw and refined sugar.

80 Ejöff, John (Peasant), *Government and district of Vologda, estate of Navoisk.*

Portable soup.

81 Marimanoff & Armakoona, *Government of Shemakha*—Farmers of the Salyan Fishery.

Isinglass. Cartilage of fish (called *viziga*).

[The Russian isinglass has long been celebrated in commerce and pharmacy. It is yielded by several species of sturgeon. It is obtained from the air-bladder and sounds by a very simple process. The membranes are washed with water; the upper layer is then removed by scraping, and the remainder is dried. There are various forms of commercial isinglass, such as leaf and book, the former being the membrane dried, but not folded; the latter the same, but folded into square packages.—R. E.]

82 Felkersam, Baron, *Government of Courland, district of Grobinsk, estate of Papenhoff*—Proprietor.

Madia. Different sorts of sun-flower seeds.

83 Lisinsk Forest Institution, *Government of St. Petersburg, district of Czarskoe Sielo.*

Fir-wood extract, fir-wood turpentine, and resin.

[The extraction of tar from fir-wood is performed in the following manner:—A conical cavity is made in the ground, generally in the side of a sloping bank, and the roots of the fir, together with logs and billets of the same, being trussed together in a conical form, are let into this cavity. The whole is then covered with turf, and the wood kindled, when slow combustion takes place, during which the tar exudes and is received into barrels, which are then bunged up and ready for exportation. Resin is simply a residuary product of the process for obtaining oil of turpentine.—R. E.]

84 Rudert, Henry, *Warsaw*—Musical Instrument Maker.

Purified resin.

85 N. N., *Government of Smolensk, district of Dorogobooj.*

Wax.

86 Babaieff, Arakel, *Government and district of Derbent*—Producer.

Madder-roots.

87 Kerim-Raghim-Ogli, *Government of Derbent, district of Cubi*—Producer.

Madder-roots.

88 N. N., *Government of Shemakha, district of Shoosha.*

Bark of the wild pomegranate tree.

89 N. N., *Government of Stavropol, on the Banks of the Terek, and on the Plain of Coomack.*

Dyewood (*Statice coriaria*).

90 Kvaviloff, Popius, *Government of Tiflis, district of Telaff*—Producer.

Safflower.

91 Ayvazoff, Sergius, *Government of Shemakha, district of Baki*—Producer.

Saffron.

92 *Government of Derbent, district of Cubi.*

Yellow berries for dyeing.

93 *Government of Shemakha, district of Nookha.*

Wood and leaves of the Sumach for tanners.

94 Abdourza-Maram Ogli, *Government of Erivan, district of Sharoor*—Producer.

Native cotton.

95 Djidjivadze, Prince (Niko), *Imeretia*—Proprietor.

Cotton, produced from seeds brought from the island of Bourbon.

96 Bababikin, Michael, *Government of Pskoff, town of Kholm*—Merchant.

Flax.

97 Ardamatsky, John & Theodore, *Soletz, Government of Pskoff*—Merchants.

Flax.

98 Ardamatsky, John, *Government of Pskoff, town of Porkhoff*—Merchant.

Flax and tow of various qualities.

99 Ardamatsky Brothers, *Government and district of Novgorod*—Merchants.

Flax and tow of the first and second qualities.

100 Krashenenekoff, —, *Government of Orel, district of Sevsk*—Producer.

Hemp of the second quality.

102 Kazalett, Alexander, *St. Petersburg*—Manufacturer.

Oakum.

103 Filemonoff, Kozma, *Government of Jaroslaff, town of Rilsk*—Merchant.

Hemp.

104 Bukhareff, *Pskoff, District of Porkhoff, estate of Idanovich*—Proprietor.

Tow.

105 N. N., *Government of Jaroslaff, estate of Velikoe.*

Spread flax.

106 N. N., *Government of Esthonia, district of Vinsk, estate of Valk.*

Flax, sorted.

107 N. N. *Government and district of Pskoff.*
Flax, of the first and second qualities.

108 Zakharoff, Stefan, *Government of Pskoff, town of Kholm*—Merchant.
Flax.

109 Volkhonsky, Prince, *Government of Orel, district of Sevsk*—Proprietor.
Hemp of the first quality.

[Russia supplies to the United Kingdom a very large annual proportion of both flax and hemp. The quality of the fibre is generally more adapted to the fabrication of coarse articles, such as cordage, sail-cloth, &c. But finer articles, as in the specimen exhibited, are also supplied. The imports from Russia into this country of flax and hemp amount to about one million and a half cwts.—R. E.]

110 Milokroshetchnoi, Kosma, *Pudoj*—Merchant.
Korelsk flax, first quality.

111 Melnikoff, —, *Government of Vladimir, district of Melenkoff*—Merchant.
Flax, second quality.

112 Vaniukoff, John, *Soletz, Government of Pskoff*—Merchant.
Flax.

113 Vaniukoff, Theodore, *Soletz, Government of Pskoff*—Merchant.
Flax.

114 Clarke, Morgan, & Co., *Government of Vologda.*
Flax.

115 Zemskoff, —, *Government of Novgorod, town of Staraja, Russa*—Merchant.
Tow of the first and second qualities.

116 Sabinin, —, *Government of Toula, town of Beleff*—Producer.
Oakum.

117 Kaufmann, A.—Proprietor.
Specimens of different woods from the governments of Grodno, Minsk, and Volhynia.

118 Government of Cootais, *District of Ozoorget.*
Plane-tree wood. Rhododendron wood.

119 Government of Tiflis, *District of Djarobelocan.*
Walnut-tree wood. Beech-tree wood.

121 Gorigoretzk Farm, *Government of Mohileff.*
Merino wool, in a raw state.
Flax prepared by the Belgian method.
Samples of common rye.

122 Vassal, —, *Government of Tauride, district of the Dnieper*—Proprietor.
Spanish wool (merino).

123 Gamaley, Theodore, *Bessarabia, district of Ackerman*—Producer.
Spanish wool (merino).

[The specimens of wool exhibited indicate to some extent the attempts which have of late years been unsuccessfully made to introduce a fine description of wool into Russian export commerce. The wool of the Russian sheep is of a coarse kind, and unfit for the finer textile purposes. Wool has been largely exported lately from Russia, the increase having been rapid and steady.—R. E.]

124 Philibert, Lewis & Francis, *Government of Tauride, district of Melitopol*—Proprietors.
Spanish wool (Merino).

125 N. N., *Esthonia, Estates of Schloss Bargam and Kaltenbrunn.*
Merino wool.

126 Shah, Mirza-Akhoondoff, *Government of Stavropol, district of Piatigorsk*—Producer.
White wool, unwashed, of the Caratchay sheep.

127 Narishkin, L. K., *Government of Saratoff, district of Balasheffsk, estate of Serghievka*—Proprietor.
Wool.

128 N. N., *Schloss-Trikaten, government of Livonia.*
Wool.

129 Youzbash, Mahomet-Khan, *Government of Derbent, Khanate of Kiurin*—Producer.
White wool, unwashed.

130 Gigolo, Shrvili, *District of Gorsk*—Producer.
Black wool, unwashed.
Black wool of the Caratchay sheep.

131 Abramoff, John, *Government of Ekaterinoslaff, district of Rostoff*—Proprietor.
Fine unwashed Cashmere goat's-hair.

132 Cossack Women, *Government of Orenbourg.*
Goats' hair, bleached and grey.

133 Tribe of Bashkirs.
Cleaned grey and yellow camel's hair.

134 Koriakin & Mougikoff (Peasants), *Government of Vologda.*
Bristles.

135 Semenoff & Faleyeff Brothers, *Government of Kalouga*—Manufacturers.
Bristles (*okatka*). Horsehair, first quality.

[The vast importance to Russia, of the trade in bristles, may be gathered from the amount of the exports, which reach an annual sum of about two million lbs. This supply is chiefly yielded by the northern provinces. The uses of bristles in the arts and manufactures form a part of daily familiar knowledge.—R. E.]

136 Zolotoreff, James, *Government of Kalouga*—Manufacturer.
Bristles: first, second, and third qualities.
White and black horse hair.

137 Juditsky, —, *Moscow*—Producer.
Samples of cocoons, and different sorts of silk.

138 Rier, —, *Government of Tauride, district of Molotchansk*—Producer.
Raw silk.

139 Rebroff, Alexander, *Government of Stavropol, district of Piatigorsk*—Proprietor.
Raw silk

140 Rayko, Nicolas, *Odessa*—Producer.
Raw silks, and cocoons, white and yellow.

141 Vikoulin, — *Government of Voronej, district of Zadonsk*—Proprietor.
Raw silks of different colours. Organzine.

142 Hadji-Baba-Kelbalay-Oossein-Ogli, *Government of Shemakha*—Producer.

Specimens of dyed silks—crimson, black, green, yellow, and blue.

143 Rebroff, Alexis, *Government of Stavropol*—Producer.

Two cocoons raw silks, French, wound off; three of Arabian; four of Thibethian; six of Chinese; six of Chinese and French; eight of Italian; ten of Spanish; and ten of Guillane,—with their respective cocoons.

Organzine—French, Arabian, Thibethian, Chinese, Chinese and French, Italian, Spanish, and Guillane.

144 Popoff, Alexander, *Moscow*—Merchant.

Down of the best quality.

145 Lapshin, John, *St. Petersburg*—Manufacturer.

Goose down. White Bejetsk feathers. Grey feathers.

146 N. N., *Government of Erivan, district of Alexandropol.*

Persian powder for destroying insects.

148 Staffel, Israel Abraham, *Warsaw*—Manufacturer.

Calculating machine, for performing addition, subtraction, multiplication, division, and the extraction of roots, in arithmetic.

A machine for ascertaining the weight of precious metals.

149 Imperial Alexandrovsky Manufactory, *near St. Petersburg.*

Machines for trying the strength of sail-cloth, (invented at the manufactory); for trying the strength of cotton-twist; and for trying the strength of cotton thread.

A Jacquard loom, with all the improvements, made at the manufactory.

[The tenacity of any fabric may be readily ascertained by a very simple apparatus. The two ends of the fabric being secured by clamps, the latter may be separated by a screw, placed in connection with a dynamometer or a modified application of that instrument. The degree of extension induced by the fabric becomes thus indicated in lbs. by the dynamometrical adaptation; and on the screw being urged to the breaking point, that may be also determined with considerable precision. The value of this for such purposes as those indicated in the text is very evident.—R. E.]

150 Graff, Henry, *St. Petersburg*—Inventor.

Silk-throwing machine, with a copper, and all the necessary fittings.

151 Mentchinsky, Adam, *Government of Kieff*—Inventor.

Patent machine for cutting files, employed in making rasps for the beetroot sugar manufactory.

152 Heke, Daniel, *Warsaw*—Coppersmith.

A vacuum pan, for the evaporation of sugar syrup.

153 Demidoff, Messrs., *Nijne Taghilsk, Siberia*—Proprietors.

Vaschgerd (table for washing gold sand).

[The discovery of those auriferous deposits, which have given such vast importance to the metallic exploitations of the Ural, was the result of accident. The miners, occupied in their accustomed searches, and who went to explore remote territories with a view of discovering new deposits there, never supposed that the soil, which was believed to be so sterile, enclosed within its bowels more of the precious metals than they had ever dared to hope for, allowing even for the utmost good fortune; and that not only was that soil which they were quitting auriferous, but that the extraction of the metal from it would present less difficulties than the excavations of a single quarry. In the year 1774 certain repairs, effected in one of the departments of the mine of Klutchefsk, were the occasion of a bed of auriferous sand being discovered, one portion of which was first submitted to the operation of washing in 1775. This was the first operation of the kind that was ever effected in the Ural. Thirty years elapsed without this preliminary attempt leading the Ural miners any further in the course they had opened. Some researches also took place in the commencement of the present century, about the years 1804, 1807, 1810, without, however, any decisive results. In 1821 the first deposit of auriferous sand in the department of Goro-Blagodat was discovered, and in 1823 a commission, nominated by the Emperor Alexander, directed the investigation, and drew up the regulations for working it. From that epoch this important branch of mining industry has been constantly in a condition of progress.

154 Imperial Coach-making Establishment, *St. Petersburg.*

A frame for wheels without felloes. An oak wheel ring.

156 Imperial Iron Works of Votkinsk.

Iron work for gun-carriages. Girders for roofs.

157 Imperial Cast-iron Works of Koushvinsk.

Shot.

158 Imperial Iron Works of Barantchinsk.

Shells, grenades, and bombs.

159 Imperial Nijne-Issetsk Iron Works, *Government of Perm.*

Grenades.

160 Ismael-Abdool-Rughil-Ogli, *Government of Shemakha, district of Lagitch.*

Gun and pistol barrels.

161 Imperial Manufactory of Arms, *District of Zlatoust.*

Sabres and lances. Broadswords. Soldier's dagger, used by the Cossacks of the Black Sea. Soldier's cuirass. Daggers and sabres with Damascene blades, mounted with silver and ornamented.

[The manufacture of arms carried on at this and other establishments in this empire is one of great extent and importance. Progressive improvements have been made in the quality of these weapons; and they are now of an excellent description, so far as regards their practical utility. The arms produced at Birmingham present points of superior workmanship and finish; but it does not appear that for direct use they are preferable to those of Russian manufacture. The immense resources of iron ore possessed by Russia supply the raw material in inexhaustible quantities, and the use of wood or charcoal in smelting renders the product of good quality.—R. E.]

162 Khamoff, —, *Fort of Temir-Khan-Shoori, North Daguestan.*

Caucasian sabre (called *shaska*).

163 Ooste-Catchay-Ooste-Ali-Beck-Ogli, *Gemzali, Government of Shemakha, district of Nookna.*

Caucasian sabre (called *shahka.*)

164 Bazalay, —, *Village of Cazanistch, North Daguestan.*

Four Caucasian daggers.

165 Ooste-Selim-Molla Noori Ogli, *Gemzali, Government of Shemakha, district of Nookha.*

A Caucasian dagger.

166 Shah-Wedi-Ogli, *Coobatchin, Government and District of Derbent*—Goldsmith.

A Caucasian rifle.

167 Imperial Artinsk Works, *District of Zlataoust.*

Cast-steel scythes.

168 Imperial Ekaterinburg Engine Factory, *Government of Perm.*

Mechanical tools.

169 Imperial Ijorsk Works, *near St. Petersburg.*

Drawing instruments in mahogany cases, mounted in silver and in brass.

Pocket drawing instruments, including compasses, pens, &c., in brass and silver variously ornamented.

Sextants, 10 inches radius, in mahogany cases.

Levelling instruments, with additional horizontal divided circle.

170 Pick, James, *Warsaw*—Manufacturer.

Microscope, with two eye-pieces, three sets of achromatic object-glasses, magnifying 800 times, three adjusting screws, and all the necessary apparatus for making observations.

A level, with two achromatic telescopes.

A quadrangular magnifying glass, of foreign material, polished at the exhibitor's manufactory, and mounted in tortoiseshell. A pair of spectacles.

171 Rudert, Henry, *Warsaw*—Manufacturer.

A small violin, the upper part made of fir, the sides, back, and handle, of plane wood, with a bow.

172 Lihtental, —, *St. Petersburg*—Manufacturer.

Imperial pianoforte; cottage pianoforte.

172b Vesoffchikoff, —, *Nijne-Novgorod*—Manufacturer.

Iron scale-beam.

173 Rabeneck, Lewis, *Government of Moscow, district of Bogorodsk, estate of Sobolevo*—Manufacturer.

Cotton twist. Red twill (*coumatch*). Plain velveteen. Plain and printed calico. Printed handkerchiefs.

All these articles dyed with madder from Derbent, on the Caspian Sea; and instead of gall-nuts, an extract of fir-wood, invented by the exhibitor, is employed as a mordant.

[The term mordant in dyeing is applied in the following manner. The colouring substance employed is generally in solution in water. It becomes necessary to transfer this colour to the fabric, and in such a manner as to render it afterwards insoluble in water. The dye is consequently applied until the fabric is saturated with it; but if now removed and washed, great part of the colour would be discharged by the water. In order to obviate this result a mordant is used. It is intended to form in the fibres of the tissue a coloured precipitate, insoluble in water. This being effected, the colour is firmly retained by the fabric, and water has no longer the property of dissolving it out. A variety of mordants are employed; but the particular substance used in the specimens exhibited cannot be accurately gathered from the description given.—R. E.]

174 Popoff, T., & Sons, *Government of Vladimir, Shouia*—Manufacturers.

Long cloth.

175 Panteleeff, —, *Government of Moscow, district of Bogorodsk*—Proprietor.

Cotton velvet, of different colours.

176; 191; 199; 208 Rochefort, James, *Government of Moscow, estate of Perovo*—Manufacturer.

Printed muslin dresses, of different colours. White, black, and net shawls. Net neckerchiefs. Lace. Printed mousseline-de-laine dresses. Printed dresses, in goat's hair. Printed Scotch woollen square shawls. Patterns of printed barège, made in silk and wool; of barège glacé, made in silk and wool; of printed cloth, for furniture; of cloth and of poplin (warp of Shamakhansk silk, weft of English wool); and of Cashmere, Saxony wool. Printed foulard handkerchiefs, of Persian silk. Foulard handkerchiefs, dyed with madder, of Transcaucasian silk. Printed silk and crape neckerchiefs, of Transcaucasian silk; figured printed silk neckerchiefs (warp of Italian silk, weft of Shamakhansk silk); printed foulard ditto, of Persian silk; crape dresses, of different colours, of Transcaucasian silk. Printed silk dresses (warp of Italian silk, weft of Transcaucasian silk). Foulard checked dresses (warp of cotton, weft of Transcaucasian silk). Alexandra pink gauze.

177 Mayer & Zindell, *Moscow*—Manufacturers.

Chintz of various qualities.

178 Czarevsk Chintz Manufactory, *Government of Moscow, district of Dmitrovsk.*

Chintz of different colours. Furniture chintz.

179 Lutch, James, *St. Petersburg*—Manufacturer.

Chintz of various patterns.

180 Zouboff, D., & Stepounin, A., *Government of Tshernigoff, district of Sourajsk, suburb of Klintz*—Manufacturers.

Dark blue cloth.

181 Stumpf, Frederic, *Government of Warsaw, town of Tomascheff*—Manufacturer.

Green and black cloth.

182 Aksenoff, John, *Government of Tshernigoff, district of Sourajsk, suburb of Klintz*—Manufacturer.

Light grey cloth.

183 Cacki-Shvilly, —, *Government of Tiflis, district of Djarobelocan*—Producer.

Ossetian cloth (called *tiftick*).

184 Isaieff, P., *Government of Tshernigoff, district of Sourajsk, colony of Novi Meziritch*—Merchant and Manufacturer.

Cloth of different colours.

185 Zakhert, W., *Government of Grodno, town of Suprasl*—Manufacturer.

Cloth of different colours; doeskin.

186 Tscharti-Obdool Ogli, *Government of Tiflis, district of Djarobelocan*—Producer.

Cloth for Caucasian trousers. Lesghian cloth.

187 Tchetverikoff, —, *near Moscow*—Manufacturer.

Black satin amazone, made of wool from the flocks of Count Nesselrode.

188 Tchuriloff, —, *St. Petersburg*—Manufacturer.

Silk and wool mixed cloth, with silk stripes. Checked cashmere.

189 Goutchkoff, Elphin & John, *Moscow*—Manufacturers.

Plain, figured, and striped cashmere. Mousseline de laine, plain and printed. Scotch cashmere and cashmerian shawls. Table-covers. Poplin.

190 Volner, —, *Moscow*—Manufacturer.

A variety of French merinos, cashmeres, mousseline de laines, and satin de laines, of different colours; manufactured from Russian and Saxon yarns.

Samples of woollen yarns, of different colours and qualities.

192 Moes & Co., *Government of Grodno, near Belostok*—Manufacturers.

Patterns of doeskin. Woollen yarn, of various qualities.

193 Narimoff, Ovaness, *Government of Shemakha, town of Shoosha*—Producer.

Woollen socks for men and women.

194 Ooste, Alexar, *Government of Shemakha, town of Nookha*—Embroiderer.

Embroidered cushions of red and blue cloth.

195 Favar, C., *District of Moscow, estate of Poushkino*—Manufacturer.

Woollen damask.

196 Nogaisk Tartars—Producers.

Camlet made of camels' hair, white and grey.

197 Dourassoff, —, *Government of Orenburg, district of Bougourouslansk*—Proprietor.

Cloth made of camels' hair.

198 Cossack Women, *Government of Orenburg*—Producers.

Spun goats' hair. Shawl made of goats' hair.

200 Tribe of Bashkirs—Producers.

Spun camels' hair.

201 Ayrapet, Taraeff, *Government of Shemakha, town of Shemakha*—Manufacturer.

Taffeta. Caucasian silk stuff (called *moff*).

202 Sitoff Brothers, *Moscow*—Manufacturers.

Samples of brocade.

203 Kolokolnikoff, —, *Moscow*—Manufacturer.

Patterns of brocade

204 Lokteff, James, *Moscow*—Manufacturer.

Velvet—plain, figured, and with satin stripes. Ribbons. Plush. Waistcoats, in gros-gros. Neckerchiefs.

205 Poliakoff & Zamiatin, *Moscow*—Manufacturers.

Silver and watered glassett. Gold, and gold and silver brocade.

206 Tedjoom-Beck-Melik Shah-Nazaroff, *Government of Shemakha, town of Shemakha*—Manufacturer.

Caucasian silk stuff (called *djidjim*). Taffeta. Silk handkerchiefs. Caucasian silk stuff (called *moff*).

207 Jraf-Ogli, Pasha—*Government of Shemakha, district of Nookha, village of Khatemar*—Producer.

Taffeta of silk and cotton. Silk stuffs for trousers, as worn in the Caucasus, red, grey, and blue.

209 Zaloghin, —, *Moscow*—Manufacturer.

Gros de Naples glacé, striped, checked, and of superior quality for cloaks; watered silk; and satin.

210 & 219 Imperial Alexandrovsk Manufactory, *near St. Petersburg.*

Bleached and boiled sail-cloths. Bleached and half-bleached damask table-cloths.

A silk woven picture. Silk portraits.

211 Peasant Women, *Government of Kherson, district of Tiraspol*—Producers.

Ornamental head-dresses (called *naframa*). Silk sheet. Silk cloth and towel.

212 Gloushkoff-Melnikoff, Peter, *Rjeff*—Manufacturer.

Hemp yarn.

213 Gloushkoff-Melnikoff, Paul, *Rjeff*—Manufacturer.

Hemp yarn.

214 Gloushkoff-Melnikoff, Michael, *Rjeff*—Manufacturer.

Hemp yarn.

215 Bistrom, Madame, *Government of Kalouga, district of Medinsk*—Proprietress.

Sail-cloth.

216 Bruzghin, A., *Government of Kalouga*—Manufacturer.

Sail-cloth.

[This product of Russian industry is one of great importance among the textile manufactures of the empire. Flax, being produced in large quantities as a home-grown article, supplies the necessary raw material at a cheap rate, and the manufacture has, in consequence, attained a condition of much prosperity. In addition to sail-cloth, large quantities of coarse canvas and of cordage, for marine and manufacturing purposes, are produced.—R. E.]

217 Belibin, Paul, *Government of Kalouga*—Manufacturer.

Sail-cloth.

218 Zotoff Brothers, *Government of Kalouga, district of Kozelsk*—Manufacturers.

Sail-cloth.

220 Konovnizin, Countess, *Government of Kharkoff, district of Achtirsk*—Proprietress.

Specimens of linen.

221 Julenius, Anna (Peasant woman), *Government of Abo, Finland*—Producer.

Specimens of linen.

222 Von Mengden, M., *Government of Kostroma, district of Keneshemsk*—Proprietor.

Table-cloths; napkins; breakfast table-cloths, &c., of various qualities.

223 Kazalett, A., *St. Petersburg*—Manufacturer.

Cordage. Rope yarn.

224 Koussoff, John, & Sons, *St. Petersburg*—Manufacturers.

Hides, half-tanned.

225 Different Merchants & Peasants, *Government of Nijni Novgorod*—Producers.

Sheep-skins.

226 Litke, John, *Warsaw*—Manufacturer.
Varnished calf leather. Russia leather (*yupht*). Calf leather, for shoes. Varnished ox leather, for carriages.

227 May, Rudolph, *Warsaw*—Manufacturer.
Varnished calf leather, for shoes. Varnished ox leather, for carriages. Black oil-cloth.

228 Ozerov, Theodore, *Government of Koursk, district of Belgorod, village of Bessonovka*—Proprietor.
Black leather, varnished, for bridles. Thin black leather, varnished, for carriages. Black Russia leather. Goat skins, varnished, and soaked in salt. White calf-skins.

229 Podsossoff, Peter, & Sons, *Government of Nijni Novgorod, Arzamass*—Manufacturers.
Red Russia leather.

[The production of this article of universal celebrity forms one of the most successful of Russian manufactures. Owing to some unexplained causes, the same process of manipulation which is carried on in Russia with the best result yields only inferior products when it has been elsewhere attempted. The process is very simple; but its success appears to depend upon some local cause, and is generally attributed to the water or to the bark used. The peculiar and agreeable odour of Russian leather is due to its impregnation with an empyreumatic oil, obtained from the bark of the birch tree. The leather has the property of resisting decay and the attacks of fungi, insects, &c., whence its value for bookbinding purposes.—R. E.]

230 Different Peasants, *of the Government of Ekaterinoslaff*—Producers.
Lamb-skins.

231 Shouvaloff & Son, —, *Moscow*—Manufacturers.
Varnished leather.

232 Skvorzoff, —, *Government of Moscow, district of Svenigorodsk*—Manufacturer.
Leather for boots. Sole-leather.

233 Satournin, Matthew (Peasant), *Government of Nijni Novgorod, district of Balashinsk*—Producer.
White and black leather.

234 Miller, —, jun., *Warsaw*—Manufacturer.
Gentlemen's boots, of extraordinary lightness. Shoes, without seams. Morning boots, made of different pieces of leather.

236 Jalovitzin, John, *Government of Kalouga*—Manufacturer.
Sole-leather, tanned with extract of rye.

237 Gribanoff, Peter, *Government of Kalouga*—Manufacturer.
Sole leather, tanned with extract of rye.

238 Boudelin, A., *Government of Nijni Novgorod Arzamass*—Manufacturer.
White and red Russia leather.

239 Koteloff, Peter, *Kasan*—Manufacturer.
Morocco leather, for exportation to China, and for home consumption. Morocco leather for shoes.

[Morocco leather, when genuine, is the prepared skin of the goat. It differs from other leathers in this respect, and in the following: it is first tanned by a modification of the ordinary process, and subsequently dyed; but the dye is applied on the side of the grain. Its use in European countries is principally for ornamental manufactures and small wares; but in the East it is applied to many of the ordinary purposes for which a heavier article is required in other climates.—R. E.]

240 Bakhroushin & Sons, *Moscow*—Manufacturers.
Morocco leather of different colours. Calf leather for boots.

241 Shouvaloff & Son, *Moscow*—Manufacturers.
Ladies' water-proof boots, without seams. Ladies' clogs.

242 Mahmet-Veli-Ogli, *Shoosha*—Producer.
A horse-rug.

243 Abdool-Mahomet-Ogli, *Government of Shemakha, district of Nookha.*
Skin of a wild goat.

244 Abass-Bak, *Government of Shemakha, district of Lencoran.*
Leopard, tiger, and pelicans' skins.

245 Mahomet-Ogli, *Government of Shemakha, district of Nookha.*
Skin and horns of the mountain sheep.

246 Ali Mehemet, *Government of Shemakha, district of Salyan, village of Saydan.*
Antelope skins (called *djeyran*). Skins of martens.

247 Semenoff, & Faleyeff Brothers, *Government of Kalouga*—Manufacturers.
Trimming of eider-down.

248 Bezroukavnikoff-Sokoloff, Alexander, *St. Petersburg*—Manufacturer.
Prepared horse-hair for furniture and mattresses.

249 Cassim-Oussein-Cooli-Ogli, *Shoosha, Government of Shemakha*—Embroiderer.
Horse-trappings, embroidered with silk.

250 Dada Badanoff, *Shoosha, Government of Shemakha*—Manufacturer.
Caucasian saddle-tree.

251 Djifaroff Agadjan, *Town of Shoosha, Shemakha*—Manufacturer.
A Caucasian bit.

252 Tabanoff Arutin, *Town of Shoosha*—Producer.
A saddle-bag.

253 Hassan-Ooste-Neftali-Ogli, *Town of Shoosha*—Producer.
Saddle-cloth.

254 Irza-Cooli-Hadji-Cagraman-Ogli, *Nookha, Government of Shemakha*—Producer.
Silk horse-cloth (called *cadjara*). Caucasian housing (called *yachar-ich*).

255 Raphi-Nuba-Ogli, *Town of Shoosha*—Producer.
A saddle packing-bag (called *mofram*).

256 Roostam, Cazaroff, *Town of Shoosha*—Manufacturer.
Circassian stirrups for common use.

257 Gambartzoomoff, Artem, *Town of Shemakha*—Manufacturer.

Caucasian steel stirrups, inlaid with gold.

258 Petit, A., *Odessa*—Inventor and Maker.

Wigs made by a new method.

259 Ivanoff, Peter, *St. Petersburg*—Manufacturer.

Plumes, made of buffalo-hair, of different colours. Plumes made of horse-hair. White buffalo-hair, bleached, unbleached, and in a raw state. Hair from horses' manes, bleached and unbleached. Hair from horses' tails, bleached, unbleached, and crimson-dyed. Hair from the tail of the black buffalo. Black horse-hair; and horse-hair dyed black.

260; 302 Vargounin Brothers, *St. Petersburg*—Manufacturers.

Paper hangings; copying paper; medium; white post; and writing paper.

261 Solenikoff, —, *Government of Vladimir, district of Pokrovsk, estate of Serghievka*—Manufacturer.

Writing-paper. Post paper, blue and white.

262 Fetter & Rahn, *Warsaw.*

Paper of various colours and different qualities. Book of patterns. 36 specimens of paper hangings; patterns of paper-hangings. Table-covers in oil-cloth. Gross of pencils.

263 Kerbalay-Khooda-Aghali-Ogli, *Town of Baki, Shemakha*—Producer.

A Carpet.

264 Baba-Imam-Verdi-Ogli, *Town of Shoosha.*

A felted carpet.

265 Bardoffsky, Theodore, *St. Petersburg*—Manufacturer.

Articles of furniture, and utensils, made of felt.

A soldier's cap and other articles made of horse-hair.

266 Levasheff, —, *Government of Nijni Novgorod*—Proprietor.

Various mats.

267 Ivanoff (Peasant), *Government of Kostroma, district of Vetlowjsk, Starkovo*—Producer.

Check mats.

268 Schultz, —, *Government of Perm, district of Ekaterinburg*—Proprietor.

Mats made from the bark of the aspen tree.

[The botanical name of the true aspen tree is *Populus tremula*, and it is a member of the family of *Salicaceæ*. If such be the tree to which reference is made in the text, the application of its bark must be claimed as unusual, since the bark is not in other countries applied to any economical purpose of any description, although the wood is valued for the manufacture of arrows.—R. E.]

269 Hadji-Aga-Baba, *Government of Shemakha, Town of Shoosha*—Embroiderer.

Blue woollen table-cloth, embroidered with silk.

270; 277 Lafont, Paul, *Moscow*—Manufacturer.

Printed shawl, and silk gloves. Figured tulle.

271 Fitzner, Christian, *St. Petersburg*—Manufacturer.

Folding hat; silk hats.

272 Lott, George, *Warsaw*—Manufacturer.

Bonnets of Italian and Belgian straw.

273 Benno-Niveta, *Warsaw*—Manufacturer.

Gloves of Russian kid, for ladies and gentlemen.

274 N. N., *Town of Nakhitchevan, district of Taganrog.*

Bracelets in silver (*niello*); thimble and ring in silver; silver needle-case (*niello*). Small steel-edged dagger (called, in Turkish, *taban*) in a silver sheath. Sashes of gold ribbon (*niello*), for men and women. Cap (called *fess*) worked by the women of Nakhitchevan. Shoes, embroidered in gold.

275 Shekhonin, Alexis, *Novotorjok, Government of Novgorod*—Merchant.

Velvet boots, embroidered with gold and silver, and in leather. Velvet vamps, embroidered with gold; satin vamps, embroidered with gold. Chamois leather vamps, embroidered with gold and silver; in leather, embroidered with gold and silver, and wove in silk and tinsel. Slippers, wove in silk and gold. Silk and gold, and silk and tinsel sashes.

276 Shekhonin, —, *Torjok*—Manufacturer.

Boots, embroidered with gold. Satin caps, embroidered with gold. Velvet caps, embroidered with silver. Morocco cap, embroidered with gold. Silk and tinsel flat caps. Shoes, embroidered with gold and silver. Boot-legs, embroidered with silver. Ladies' boots, embroidered with silk and silver, and with gold and silver; shoes of the same description. Morocco vamps, embroidered with gold and silver. Tobacco-pouch, embroidered with silver. Vamps wove silk and gold.

278 Khirghis, —, Producer.

Yergack, or cloak, made of horse-skins.

279 Kerbalay-Hoossein-Ogli, *Government of Tiflis, district of Djiarobelocan*—Producer.

Caucasian felted cloak of the Lesghis.

280 N. N., *Abasia.*

Caucasian felted cloak (called *boorka*).

281 Merlin, A. & V., *Government of Riasan, district of Jegorievsk*—Proprietors.

A shawl.

282 A Cossack's Wife, *Government of Orenburg*—Producer.

Shawl made of white goat's hair.

283 Ladighin, Madame, *Government of Tamboff*—Proprietress.

Articles made of goose-down:—Texture for a pillow-case. White woven muff, with borders: Turkish pattern.

284 Saphianov, Albertzoom, *Town of Shemakha*—Manufacturer.

Caucasian gallooned collars. Galloons of three qualities.

285 Imperial Alexandrovsky Cannon Foundry, *Government of Olonetz.*

Statue and bust of Napoleon. Clock cases (Les Adieux); and (Chevaux de Marly). Letter-presser.

286 Iakovleff, Madame Catherine, *Estate of Grishino, Government of Riazan*—Proprietress.

Hardware:—Table knives and forks, with ivory handles, mounted in silver; dessert knives, with mother-of-pearl handles, mounted in silver. Scissors and pen-knives, of various sizes. Hunter's knives, with horn handle and with ivory handle, for killing hares. Snuffers, razors, and corkscrew.

287 Krumbigel, —, *Moscow*—Manufacturer.

Two gilt bronze candelabra, of large dimensions, 14 feet high; with forty lamps.

The accompanying Plate (100) represents one of these candelabra.

288 Imperial Mining Works, *Poland.*

Kitchen utensils, made of zinc, and enamelled.

289 Buch, —, *St. Petersburg*—Manufacturer.

Samples of metal buttons.

290 Aga-Melik Mahomet-Hadji-Ussoof-Ogli, *Baki, Government of Shemakha*—Manufacturer.

Enamelled gold trinkets, viz., small goblets, sash buckles, and earrings.

Thimbles, shirt buttons, pins, buttons, and rings.

291 Hadji Mahomet Oussein Hadji Ussoof Ogli, *Town of Baki.*

Small goblets; buckles for sashes; ear-rings; thimbles; rings; pins; shirt-buttons and studs.

292 Petz, Constantine, *Moscow*—Manufacturer.

Plated tea-urns.

294 Moussin Poushkin, *Government of Novgorod, district of Krestezk*—Proprietor.

Window glass.

295 Kokhanoff, —, *Government of St. Petersburg* —Proprietor.

Window glass.

296 Ameloung & Son, *Government of Livonia, near Dorpat*—Manufacturers.

A looking-glass.

297 Gambs, —, *St. Petersburg*—Cabinet-maker.

Cabinet in rosewood, ornamented with bronze and porcelain.

This cabinet is represented in the accompanying Plate.

298 Imperial Polishing Manufactory, *Peterhoff, near St. Petersburg.*

A table, inlaid with various stones, in Florentine mosaic, on a bronze gilt pillar.

The accompanying Plate 135 represents this table.

An ebony casket, with precious stones, in alto-relievo, representing fruit, &c.

299 Miller, George, jun., *St. Petersburg*—Patentee and Manufacturer.

Coloured inlaid floor, with Grecian frieze, of different kinds of wood. An inlaid floor, with a frieze of different kinds of wood (imitation of mosaic pattern). A coloured inlaid floor, of different kinds of wood. Octagon inlaid floors, mosaic pattern, of oak and birch; with stars, in white and grey birch; in oak; coloured, with large stars; and white birch, oak, and beech (veined); in plane tree, inlaid with various precious woods, brass, mother-of-pearl, and zinc.

Small inlaid table. Octagon inlaid table.

Specimens of this inlaid work are illustrated in the accompanying Plate.

303 Beseke, —, *St. Petersburg*—Manufacturer.

Cocoa-nut soap and soap from oleine, unperfumed.

305 Matisen, Andrew, & Co., *St. Petersburg*—Manufacturers.

Stearine in lumps, and stearine candles.

306 Alftan, —, *Government of Viborg Finland, parish of Kaklinsk*—Manufacturer.

Stearine candles.

307 Pitansier, —, *Odessa*—Manufacturer.

Stearine candles.

308 Nilson & Junker, *Moscow*—Manufacturers.

Stearine candles, and cake of stearine. Lump of soda soap, prepared from oleine.

[Two principles are recognised by chemists as entering into the composition of oils and fats, a hard and crystallizable one called *stearine*, and a softer and almost a liquid one called *oleine*. The former is used for the manufacture of candles in substitution of wax; the latter is employed in that of soap. Since a soap is a true chemical compound of an acid with an alkali, soaps are called soda and potash soaps, according as either soda or potash are employed in their production. The principal source of the stearine of potash manufactories is the Russian tallow, of which large quantities are annually imported into this country.—R. E.]

309 Sapelkin, Voldemar, *Government of Moscow, estate of Vladimirovo*—Manufacturer.

Wax candles.

310 Popinoff, Sophia, *Tiflis*—Embrodieress.

Velvet cushions, embroidered with gold.

311 Lerkhe, —, *St. Petersburg*—Manufacturer.

Clogs, in India-rubber, for ladies and gentlemen.

Waterproof morocco pillow.

312 Barshaghin (Peasant), *Arkhangel*—Producer.

White felt boots.

313 Starikoff, —, *Government of Nijni Novgorod, district of Semenovsk*—Proprietor.

Felt shoes for ladies.

314 Different Peasants, *Government of Nijni Novgorod*—Producers.

Felt boots and shoes for men and women.

315 Tchupiatoff, Terenti, *Rjeff*—Manufacturer.

Specimens of carmine and lake.

316 Voloskoff, John, *Rjeff*—Manufacturer.

Various samples of carmine.

317 Voloskoff, Alexis, *St. Petersburg*—Manufacturer.

Samples of carmine; extract of carmine; carmine lake, crimson and scarlet lake.

318 Imperial China Manufactory, *St. Petersburg.*

Vases, ornamented with paintings. Slabs for tables. Several of these vases are represented in the accompanying Plates 106, 114. A porcelain slab for a table is shown in Plate 111.

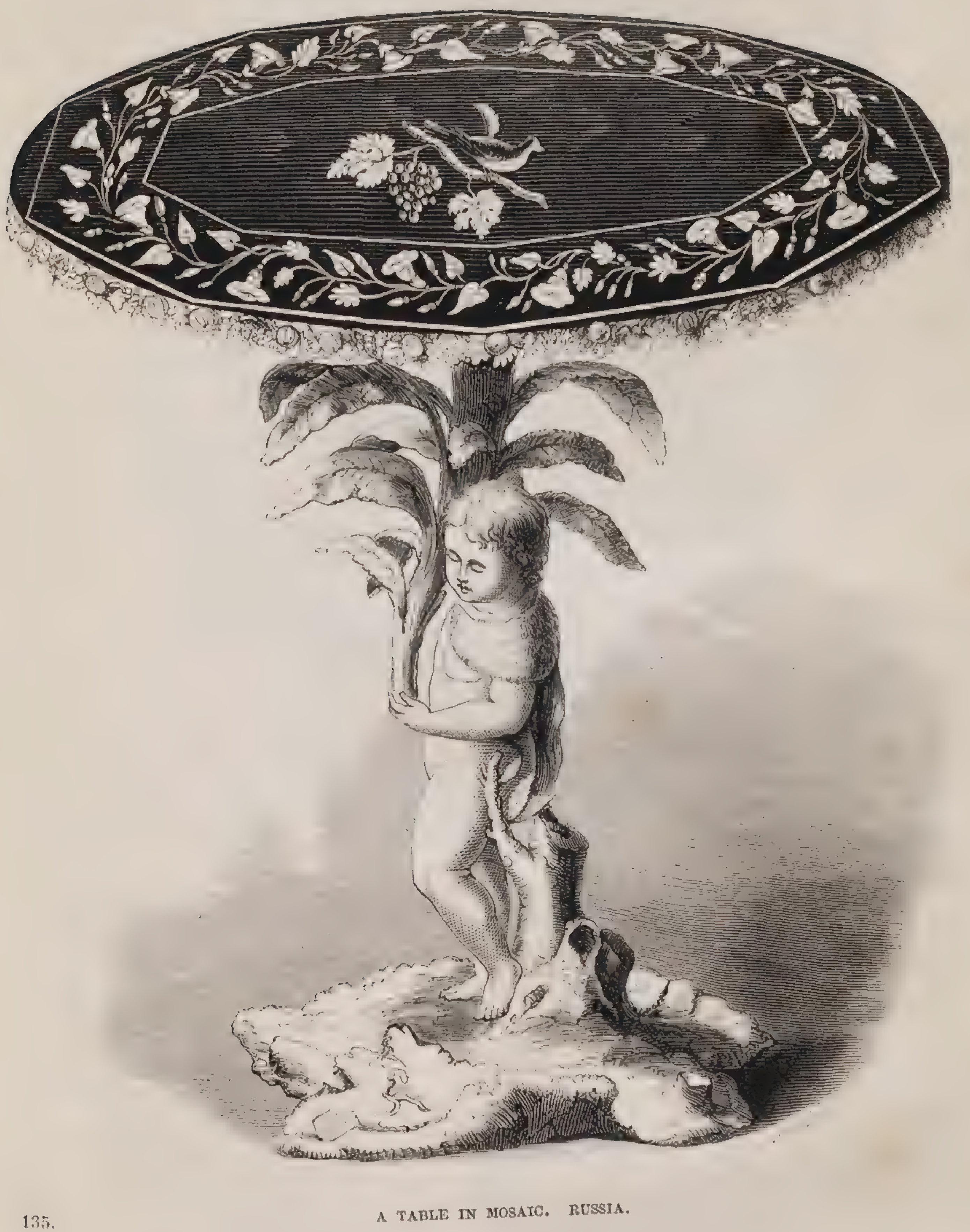
Picture on porcelain, after Berghem.

319 Loukutin, Peter, & Son, *Government and district of Moscow, estate of Danilkoff*—Manufacturers.

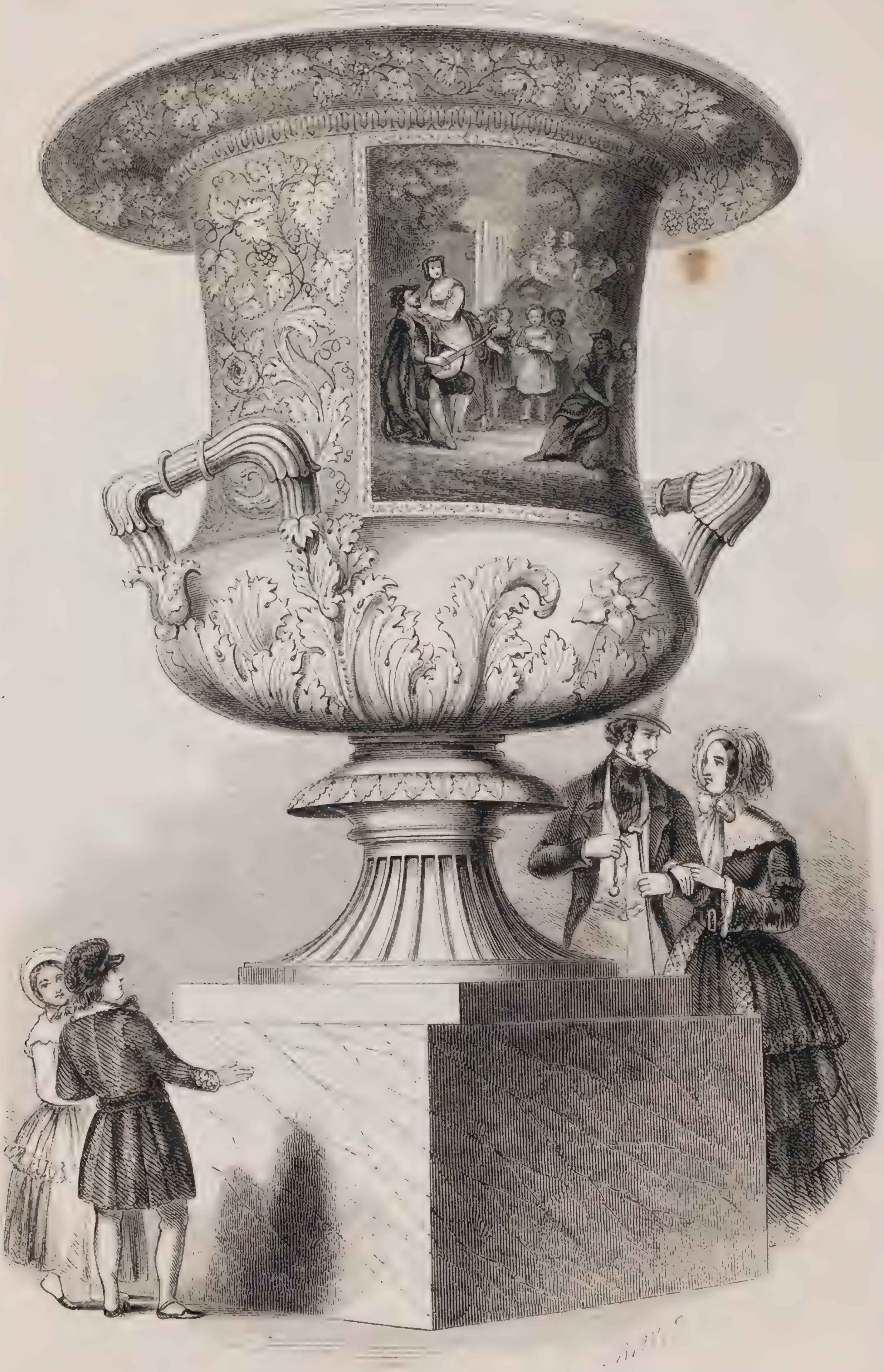
Snuff and cigar boxes. Other boxes.

320 Flerovsky, —, *Tobolsk, Siberia*—Manufacturer.

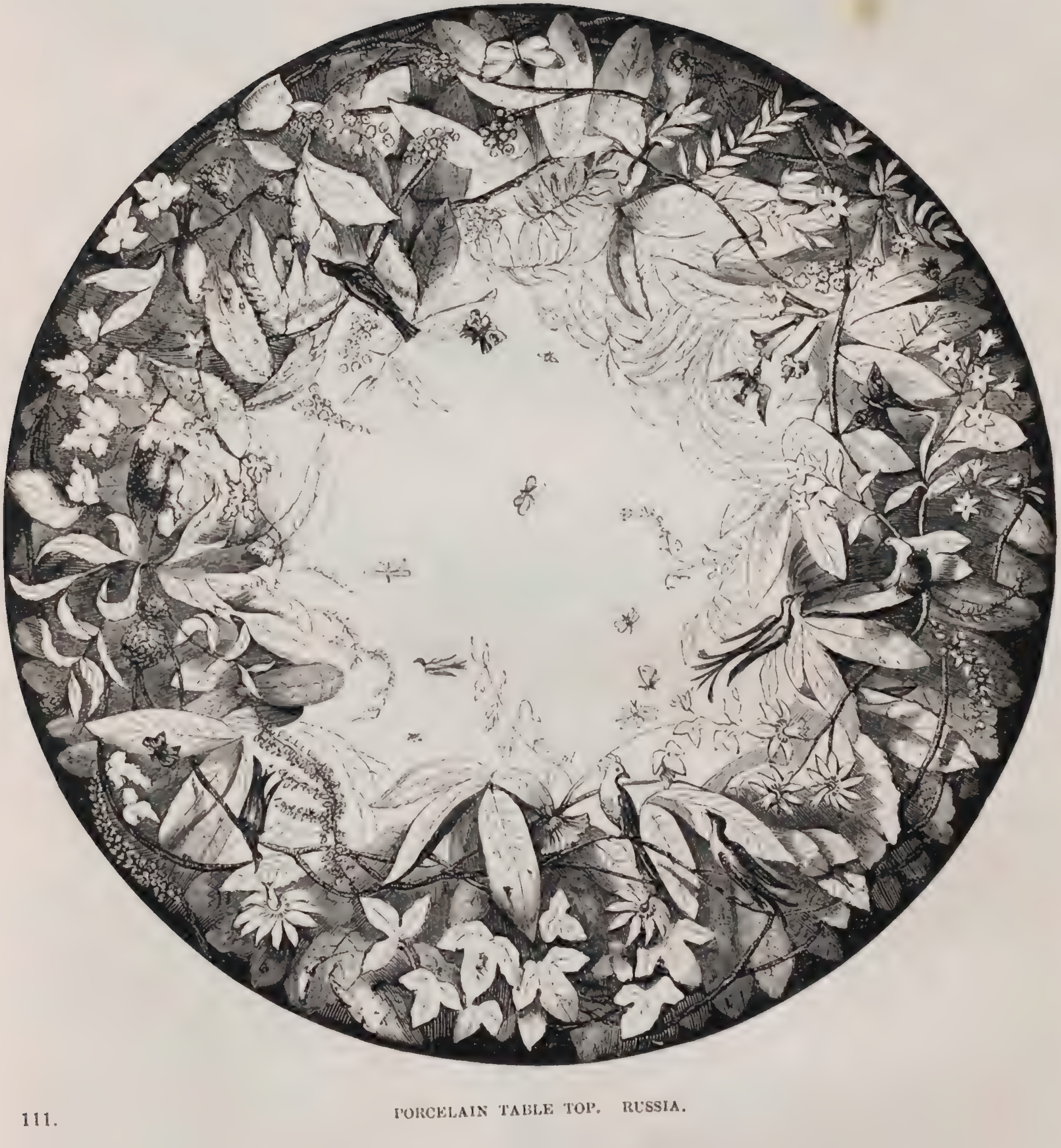
Boxes of birch bark.



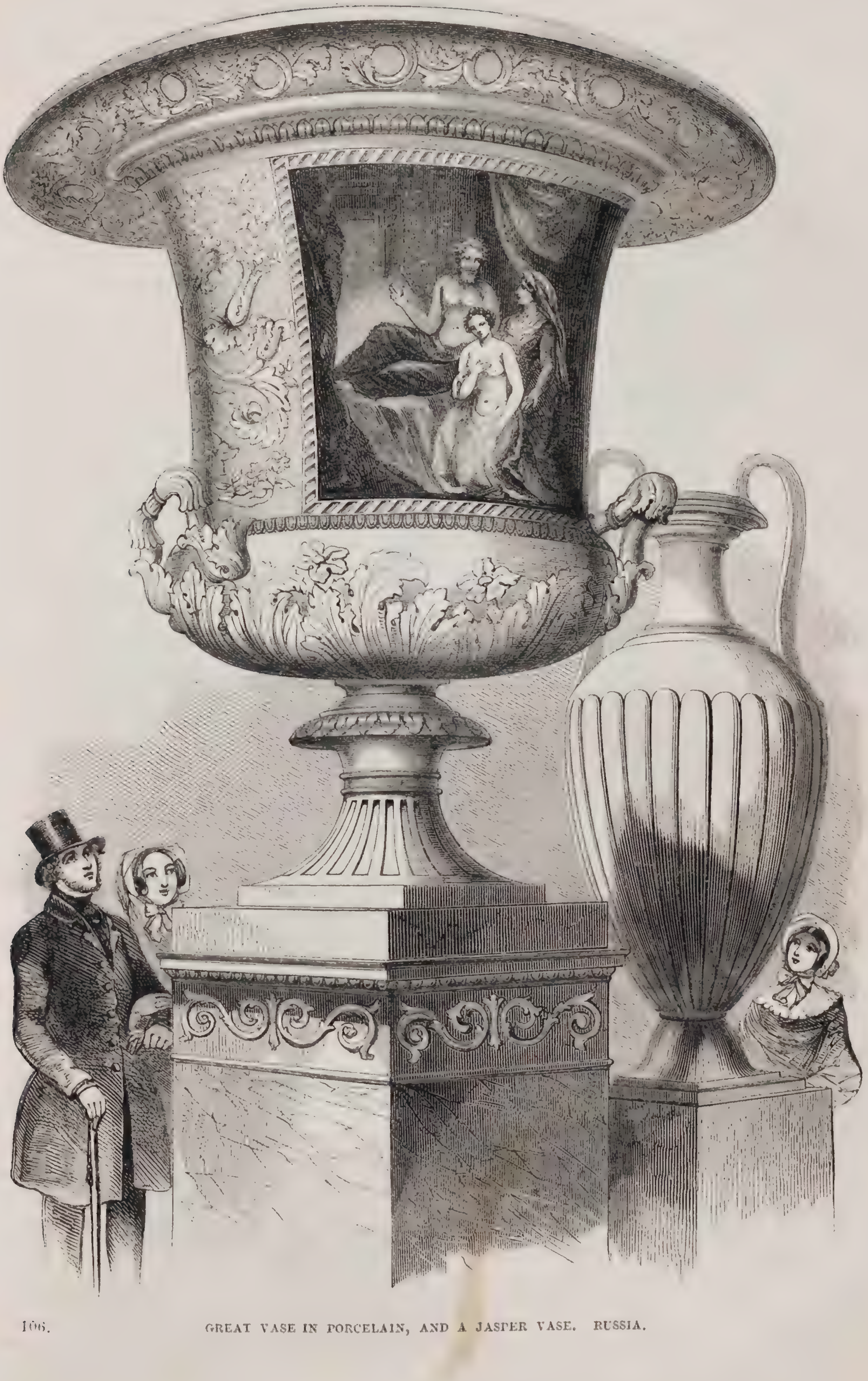
135. A TABLE IN MOSAIC. RUSSIA.



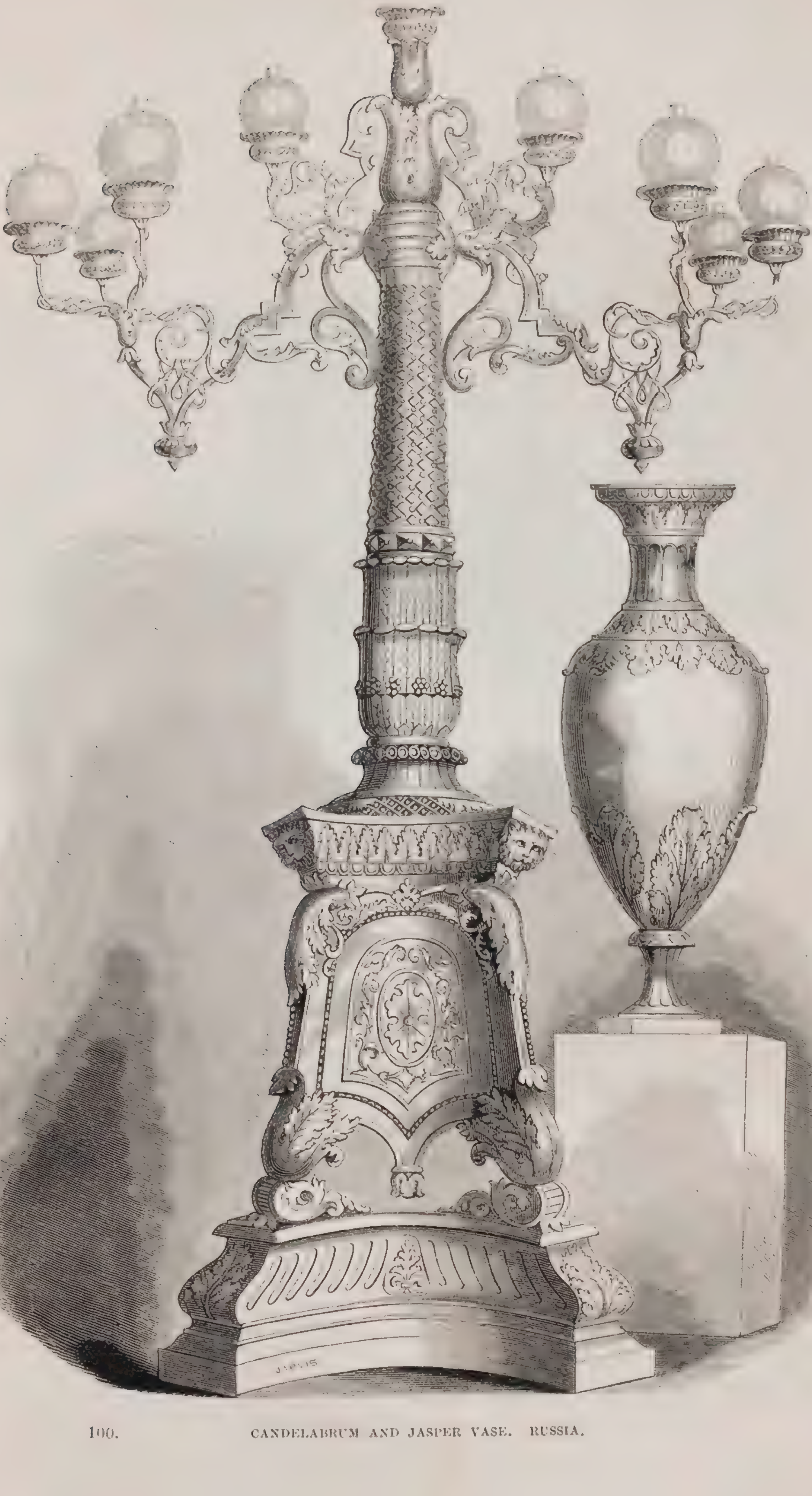
GREAT VASE IN PORCELAIN. RUSSIA.



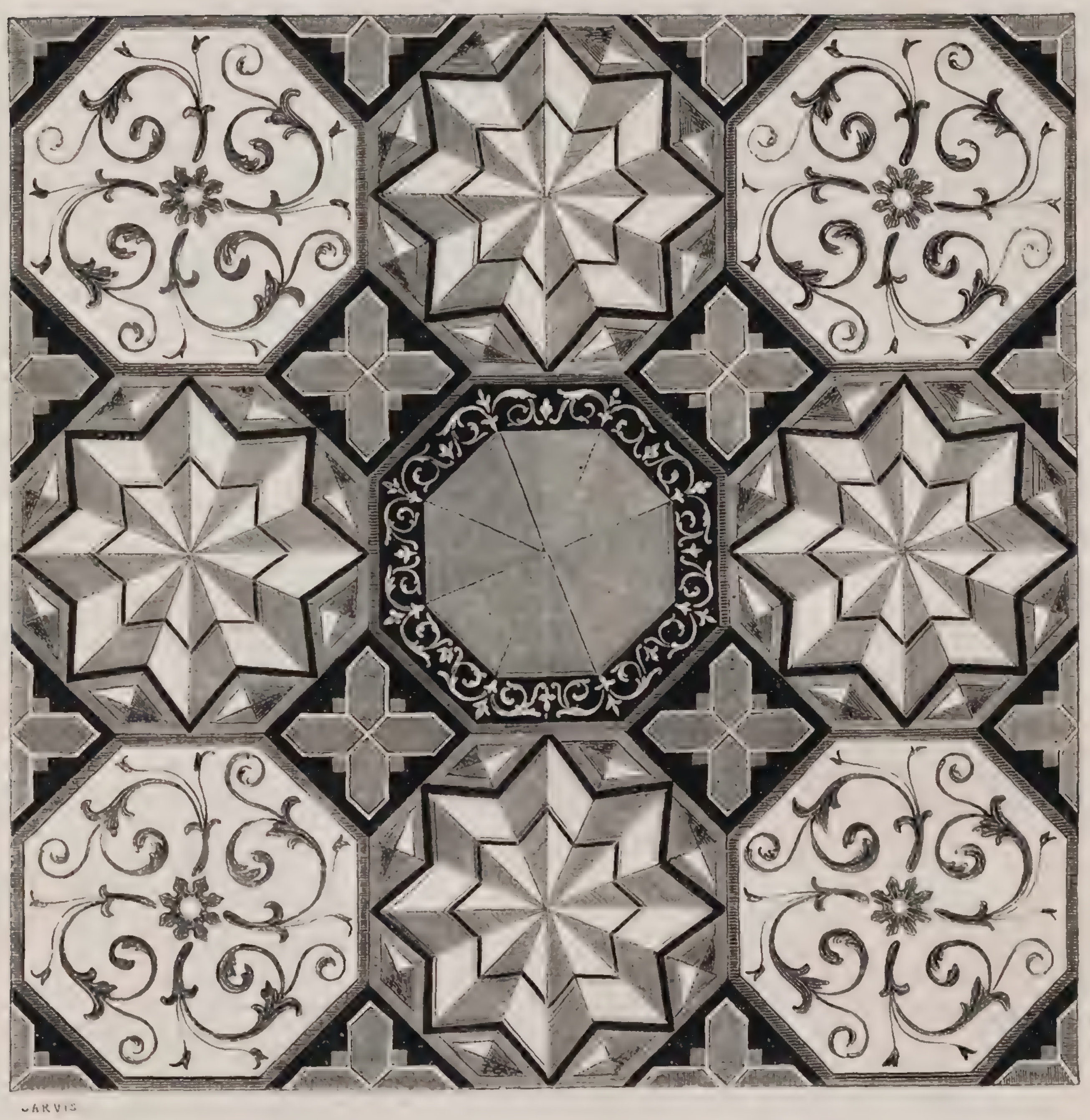
111. PORCELAIN TABLE TOP. RUSSIA.



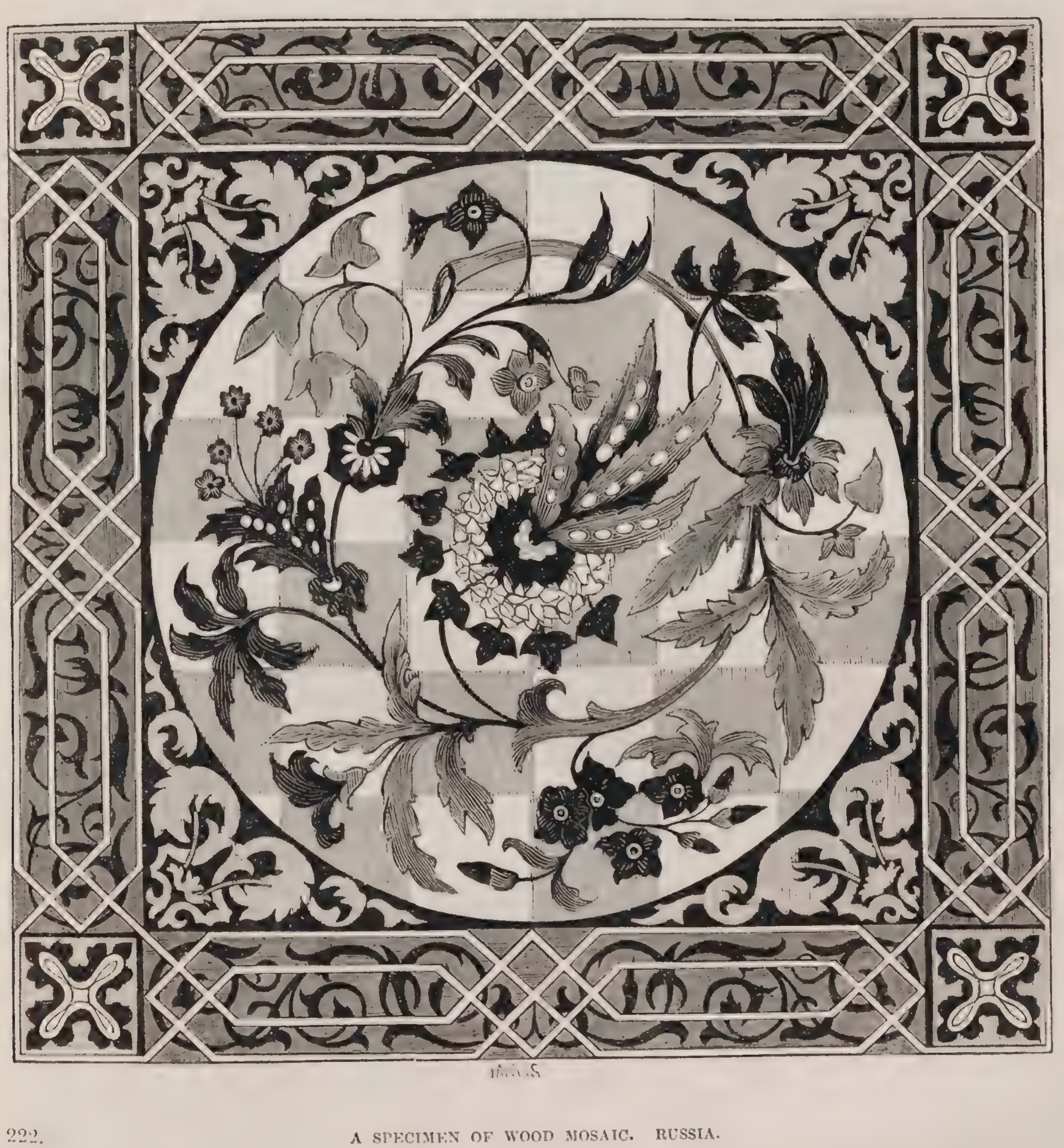
106. GREAT VASE IN PORCELAIN, AND A JASPER VASE. RUSSIA.



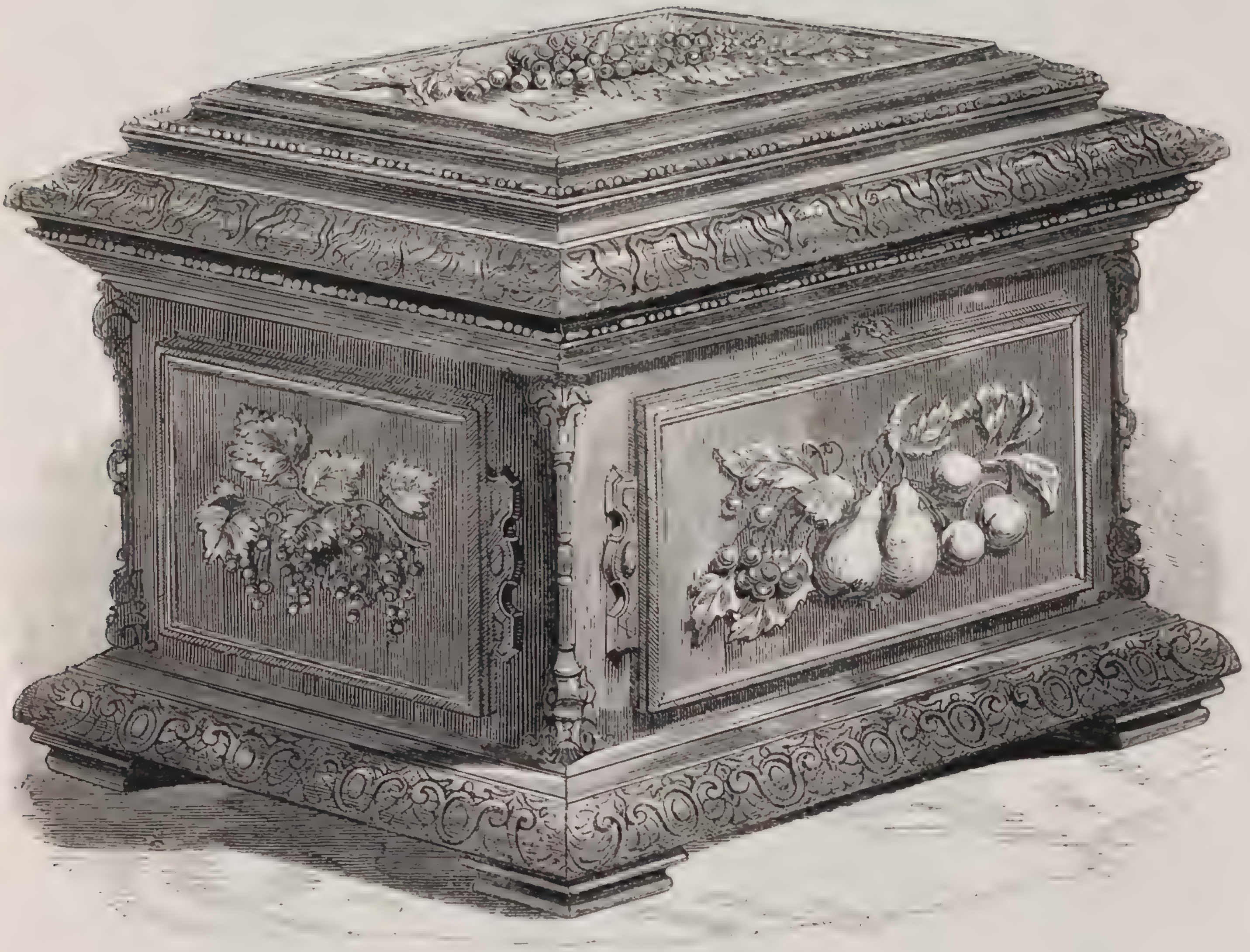
100. CANDELABRUM AND JASPER VASE. RUSSIA.



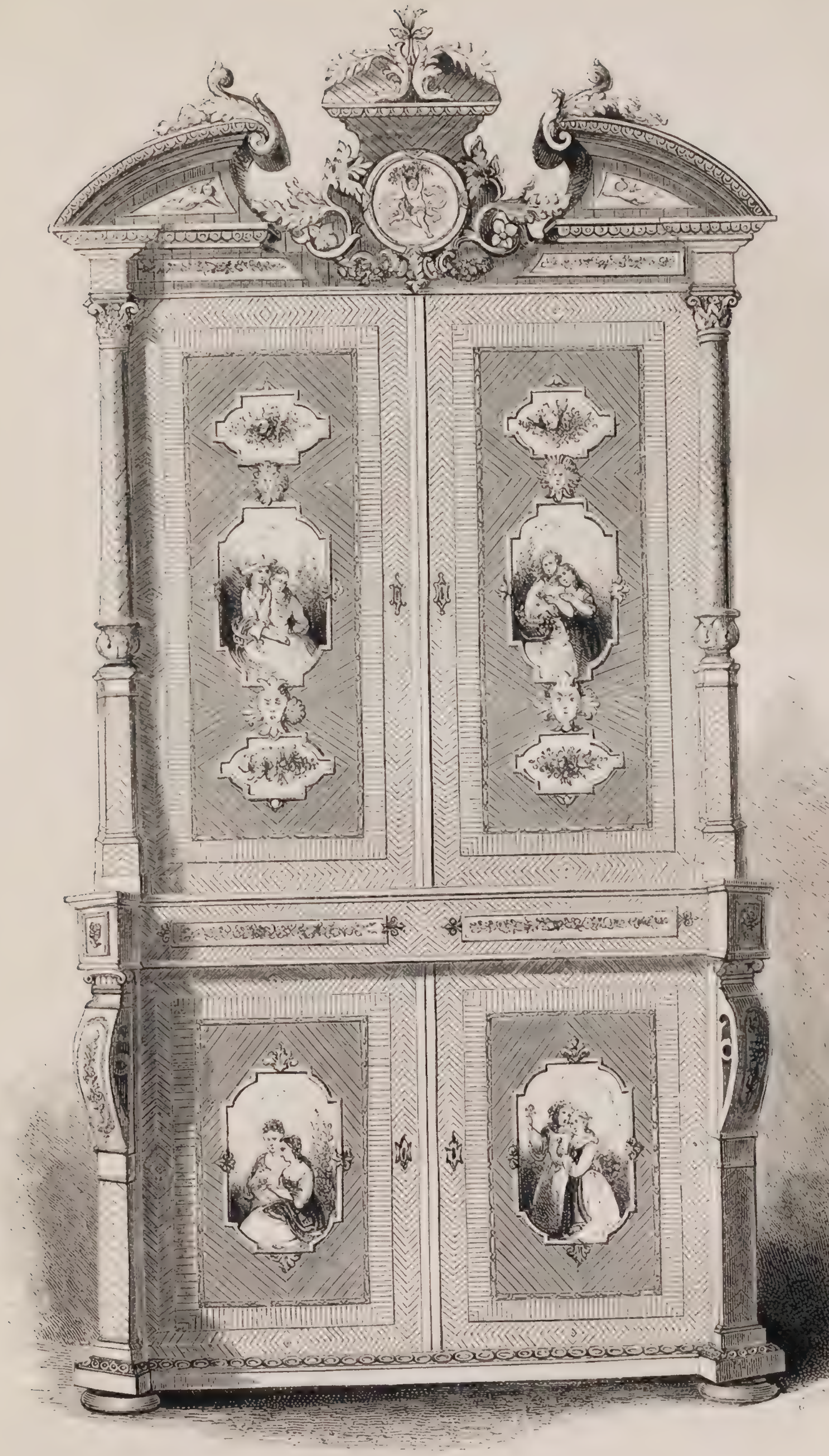
221. SPECIMEN OF WOOD MOSAIC. M. GEORGE MILLER, JUN. ST. PETERSBURG.



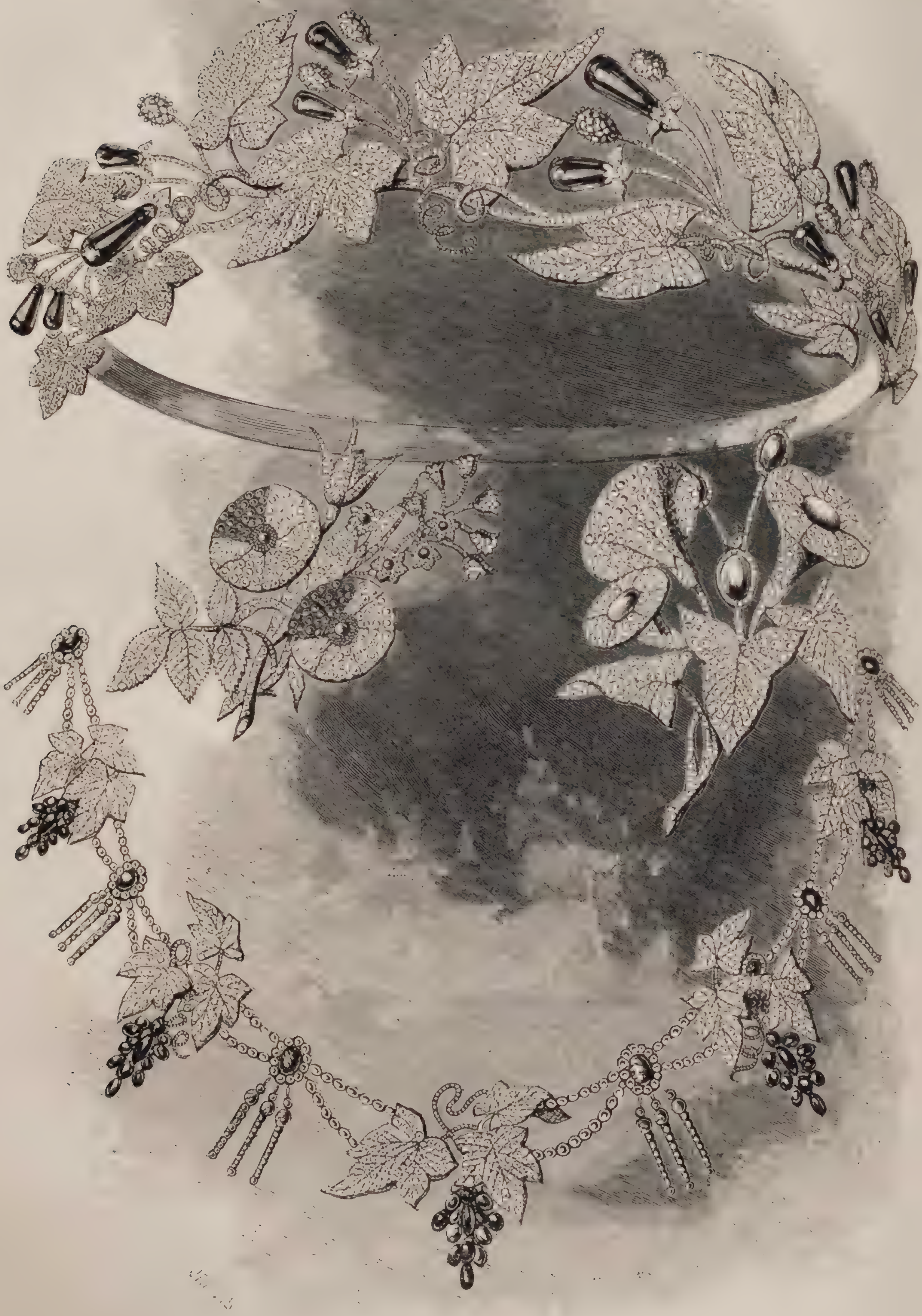
222. A SPECIMEN OF WOOD MOSAIC. RUSSIA.



240. AN INLAID JEWEL CABINET. RUSSIA.



191. INLAID CABINET. RUSSIA.



226.

JEWELLERY, BRILLIANTS AND RUBIES, RUSSIA.

321 Startchikoff, Nicholas, *St. Petersburg*—Manufacturer.

Specimen of a patented gold tissue, for the covering of cupolas, instead of copper gilt.

322 Bolin & Ian, *St. Petersburg.*

Diadem, composed of diamonds and other precious stones.

Brooch in the form of a branch.

Bracelet of turquoises and diamonds.

Gold chain bracelet, with pearls and diamonds.

Bracelet, vine leaf in diamonds, grapes in rubies.

Sévigné, diamonds and pearls.

Brooch, ear-rings, and bracelet, of turquoises.

323 Demidoff, Messrs., *St. Petersburg*—Proprietors and Manufacturers.

Articles made of malachite, viz.:—

Doors. Chimneypiece. Writing tables, oval and square. Large and small round table. Chairs in variety. Large vases (Medicis, Chinese, Rococo). Large tazza. Various sized book paper weights. An assortment of paper pressers. Pedestals, with busts of Peter the Great, Charles XII., and with figure of Peter the Great at Poltava. Clock. Several specimens and blocks of malachite. Horses, by Baron Klott, bases of green marble.

[The following account of the discovery of a great block of malachite may be considered interesting:—In searching for ores of copper in the mine of Miedro Roudiansk, situated within the lands of Nijni Tagilsk, the property of the Messrs. Demidoff, distant about 120 versts to the northward of Yekaterinburg, in the Ural Mountoins, the explorers came, at a depth of 36 sajines, to the south of the shafts of Nadejnaia, and 23 sajines below the little torrent of Roudianka, upon an immense block of malachite. That portion of it which was exposed, and detached from the surrounding rocks, measures on one of its sides 7½ sajines in length, 3½ sajines broad, and 2½ sajines in depth; and on the other side, half a sajine. From the following calculations it results that this block must contain a mass of the weight of 3,000 poods. Fragments are to be seen weighing each from 300 to 400 poods, and without fissure. The net weight of this malachite mass, deducting for cavities and inequalities, may be taken at 3,000 poods.

On detaching the block from the adjoining rocks which had been penetrated by the malachite in different ramifications, upwards of 1,000 poods of it were extracted, which are not allowed for in the foregoing estimate, so that the entire of the mass would have weighed as much as 4,000 poods, without taking into account the fact that to the north of it, in quarrying the upper stratum and the rock on each of its sides, enormous fragments of the same substance were perceived, extending over a space 36 archines in length, which were left there, and which extended further both in an upward and a downward direction. To the south this great mass, whose angle of inclination is about 18°, stretches in a direction following that of the gallery, to the extent of another 10 archines in length, so that we may assume the entire length of the visible mass to be from 45 to 46 archines. A considerable quantity of this mineral is in like manner imbedded in the side quarryings. The violent irruption of the water has hitherto precluded the further exploration of its downward extension, and the workings have not yet been commenced for following out its continuation upwards; there is, however, every reason for believing that the mass which is visible, as above described, constitutes but a very minute fraction of the entire malachitic rock. Finally, we may state that beneath this bed of malachite, at 6 sajines below its level, there is being now excavated a shaft which will be 42 sarjines deep from the surface of the soil above.

The malachite presents the appearance of a prolonged plain running from north to south, its texture composed of large and small kidney-shaped nodules. Its colour passes from a deep green, in some varieties, to a fine turquoise tint in others. On being polished it exhibits very beautiful markings, and were this mass of malachite applied to purposes of ornamental decoration, it would suffice to coat a surface of 13,440 square archines. The bed in which this vast mass is found, occurs principally in an oligistic manganiferous iron, in a state of decomposition. This occupies a space of very considerable extent eastward, and there forms into lodes. This oligistic iron has penetrated reciprocally the malachite on the east, in the shape of a wedge. Some argillaceous schist is also found here.

This great mass is surmounted by a thin crust, and composed of small nodules full of hollows, the partitions between which are coated with manganese, forming sometimes a casing for them, and occasionally dendrites, or arborescent forms. The mass is covered, in like manner, with a slight layer of decomposed oligistic iron, above which we meet with a talco-argillaceous schist, also decomposed. The superstratum and the bed of this wonderful formation are composed of the same description of rock—the schist just mentioned.

The lower gallery of the mine, at some depth below the surface soil, and carried under the malachitic mass, traverses some ferruginous rocks in which occur lodes of green carbonate of copper, succeeded by kaolin and talcose schist; at last it cuts a vein of porphyritic schist, containing ores of a brick-coloured and vitreous copper.

The largest block of malachite that had been known to exist up to the present time, was extracted in the year 1789, from the mine of Goumecheff, the property of M. Tourchaninoff. This block weighed, when found as it was deposited, 106 poods, without reckoning the fragments. It has been placed in the cabinet of the "Corps des Mines," and still weighs upwards of 90 poods.

The malachite block of Tagilsk, which, even after being disengaged from the encompassing rock, weighed more than 3,000 poods, with its compact texture and its beautiful turquoise colour, is a product unquestionably unique, of its kind, in the mineralogical history of our globe.—*Translated from the "Annuaire du Journal des Mines de Russie."*]

Two lumps of native gold.

[The following is M. Erman's account of the gold washings, and gold and silver collections at Keeshva, in a region through which the metalliferous Ural extends its mighty chain:—

At Keeshva, the gold and platinum of the district "lie in beds of pebbles, partly at the bottom of the valleys that cross the course of the Tura, and partly diffused more widely, through the plains on either side of this river; the metals lying among the detritus of the hornblende and feldspath, collected between the transition limestone rocks which bound the valleys. There would appear to be no difficulty at first as to the source of their production, as they are scattered over the slopes of the Ural, east and west. Still, the unaccountable peculiarity was found to prevail here, that the quantity of gold in the undisturbed veins of quartz was much less than in the sedimentary beds, and that it was likewise different in its form and condition, being in crystalline scales in the former, and in roundish grains in the latter. It cannot, therefore, proceed from veins like those of which the beds on the east of the hills in the district of Keeshva are formed; but the whole substance of the rocks through which these veins penetrate must be impregnated with the metal. It was in a bed of worn fragments of greenstone and limestone, washed by the River Iss into the lower valleys, after the bursting of a dam formed across it not many years since by a land-slip, that platinum sand, and iron, mixed with titanium, was first found."

In this vicinity, as well as in many other gold-washing stations near the Blagodat, grains of cinnabar frequently remain among the metallic residuum after the water runs off. This mineral is probably contained in the calcareous schists of the lower cross valleys, but its original depository is as little to be pronounced upon as that of the metals already mentioned, which are disseminated in the *débris* of the higher rocks.

In a mine, a little to the south-west of a hamlet on the banks of the Shartash Lakes, and which Erman and his companion, Professor Hansteen of Norway, descended, they found that "The surrounding formation was soft, white, decomposing gneiss, studded with coarse grains of quartz, and quantities of silvery talc. Brown spots of crumbling iron pyrites are strewn through it, but the large crystals of brown iron-stone are only met with where the quartz is deposited in narrow and tortuous streaks and veins. It is from both sides of the hard white lines that the cubic iron ore is collected containing the gold, partly dispersed in fine plates, and partly accumulated in long filaments like wire. The ore has to be followed in every direction till it runs itself out of the rock, for there is no uniformity in the range of the veins.

"The decomposing white gneiss has received the name of *Beresite*, in honour of the place. As we turned to the west of the mine, we observed this rock terminate suddenly against greenstone slate. Such interruptions are frequent in the vicinity; and we saw detached portions of these two rocks, which are so very different in character, intersect each other in every direction. There are only two of the larger seams of Beresite within this immediate circuit, which take a constant northerly course.

"The formations on the east and west afford some clue to the explanation of this remarkable phenomenon. To the north-east, beds of slate, resembling serpentine, having a northern range, and a rapid dip to the west, appear without the gneiss; and then, downwards towards the Puishma, follows pure granite, showing coarse crystals of schorl and tourmalin, running in a sort of veins. South-westward, on the Shartash, the slate is covered by the granite, which is again displaced in its turn by chlorite slate at Ykaterinburg. Similar alternations of micaceous schist and crystalline granite were frequent after leaving the pass of Reshötuî, and exist even at Makarova, on the west of the water partition of the Ural. Ores are always most productive where both formations thoroughly penetrate each other. A bold seam of quartz, rich in copper ore and the more rare chromate of lead, intersects the middle of the mining field of Beresov. This seam makes a fair passage through the slate, but loses itself in broken filaments and particles wherever it strikes the Beresite. The lead ore has never been found in conjunction with the iron and gold in the adjoining rock, only in the solid seams dividing the slate."]*

[At Latinsk, gold washing is carried on. The river, however, is only chosen for the convenience of the operation, which consists of pumping water through pipes over a slightly-inclined bench, the upper end of which is overspread with small pieces of stone and clay. The softened earth is kept constantly drawn with wooden rakes towards the upper part of the form, as long as darkish veins of mineral sediment appear in the water as it runs off.

The sediment remaining on the bench is a mixture of iron and sand, with uniform grains of solid platinum and gold. This instance alone would sufficiently disprove the notion hitherto entertained that these two metals were never found together; and that on the Ural, as well as in America, the platinum occupied the east, and the gold the west, of the mountains. Their produce was about $\frac{1}{[illegible]}$ in weight of gold, and nearly the same of platinum.*

The following is one of the most illustrative descriptions of the Siberian gold-washings:—

"Gold is likewise an object of search in the neighbourhood of Navinsk, and has been sought with some success. At about two versts from the village, the greenstone, which underlies the schistose rock of the district, is cut by two veins of quartz. The matrix of these veins is the white, soft, granitic formation, which bears the name of Beresite on the Ural, and which we shall have further occasion to notice when we come to Beresov. . . . . The gold is found here, as well as at Beresov, in a brownish ironstone, which occurs either in crystals in the offshoots of the quartz veins, or in a state of minute division in the contiguous Beresite. This stone had been raised for some years by means of shafts from 2 to 4 sajenes (14 to 28 feet) deep, but this plan is now given up for the more profitable one of washing the gold from the shivered and decomposing rocks of the environs. In some of the dry chasms that traverse the valley of the Neva, for instance, a very rich stratum of argillaceous earth is found, containing scattered fragments of angular quartz and greenstone, and as this is only covered with a thin layer of turf; the gold may be reached without difficulty. The many spots of this character where gold is obtained in the surrounding districts seems to justify the notion entertained here, that the reddish earth which sticks to the wheels of the waggons on the grand road over the Ural would yield a portion of gold. No platinum has yet been discovered at Nevgansk; but, judging from analogy with other places, in the vicinity of which it is found, there can be no reasonable doubt of its being some day obtained from the disintegrated greenstone."]

Three lumps of native platina.

[Beds of platinum occur about twelve versts W.N.W. of Chernoistichinsk. The approach is by a road, hilly on either side, and the beds themselves are on the banks of a tributary to the Chusovaia, running south at this point. The Siberian explorators, on the great magnetical overland expedition of 1825, observe: "There was nothing to give us any idea of the direction of the slope; by the eye, it was quite impossible to determine that it declined to the west. After having examined the tables of greenstone slate, overlaid by micaceous rock, which stand nearly vertical, though obviously leaning to the east on

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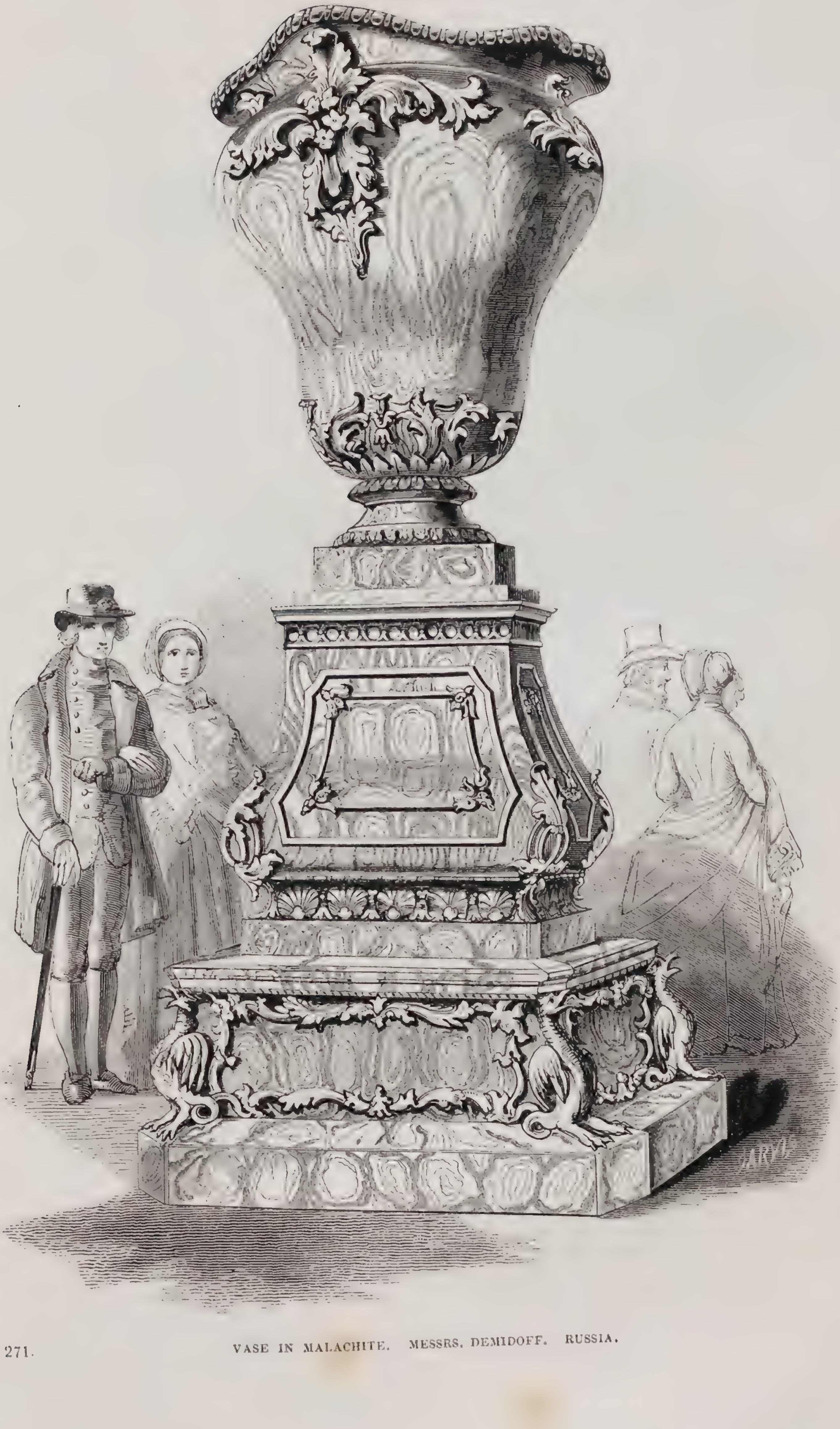
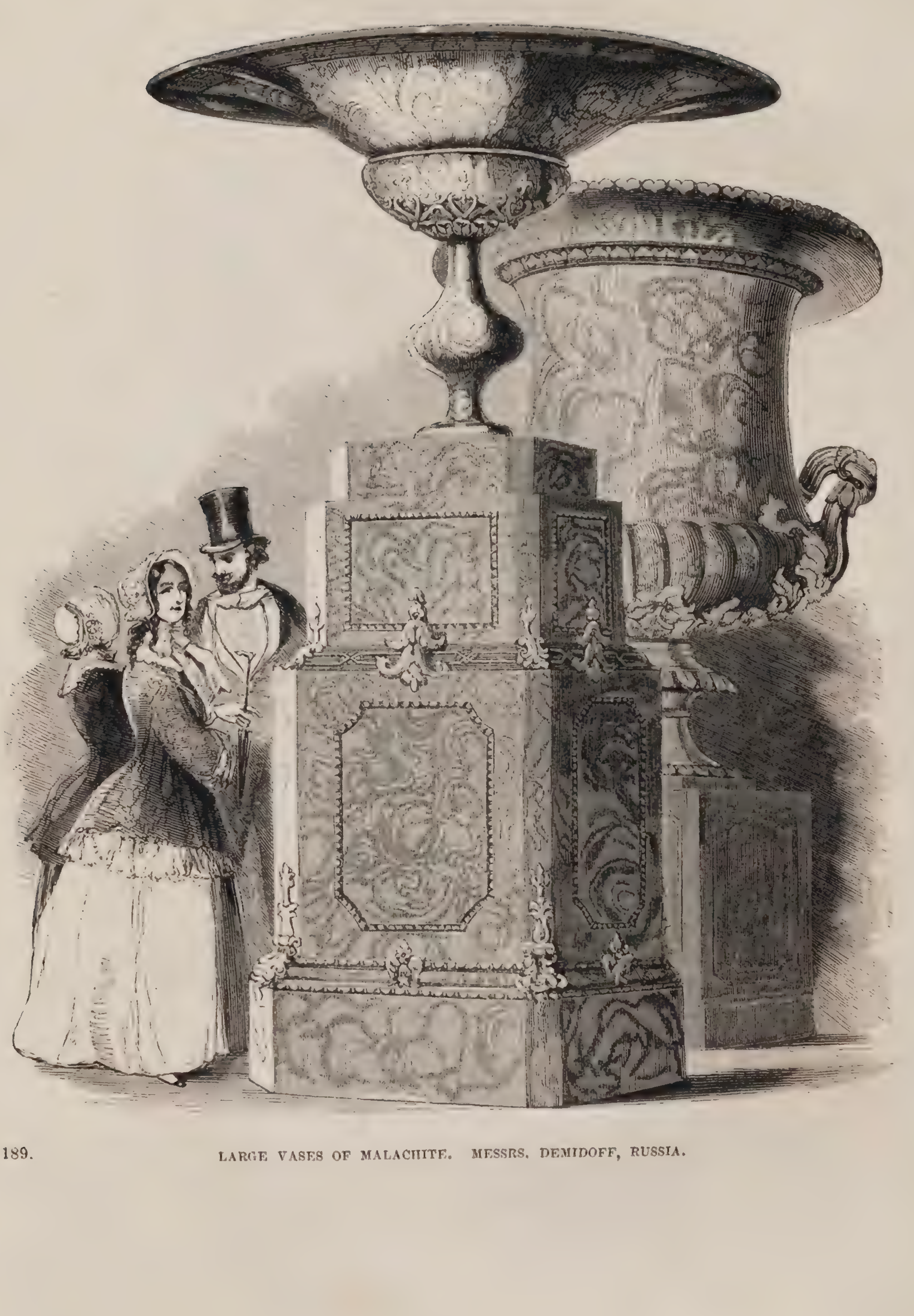
* The only silver ores known on the Ural are found at Blagodat, 20 versts to the N.N.E., where a quartz seam runs into green slate. It is accompanied by lead spath also.

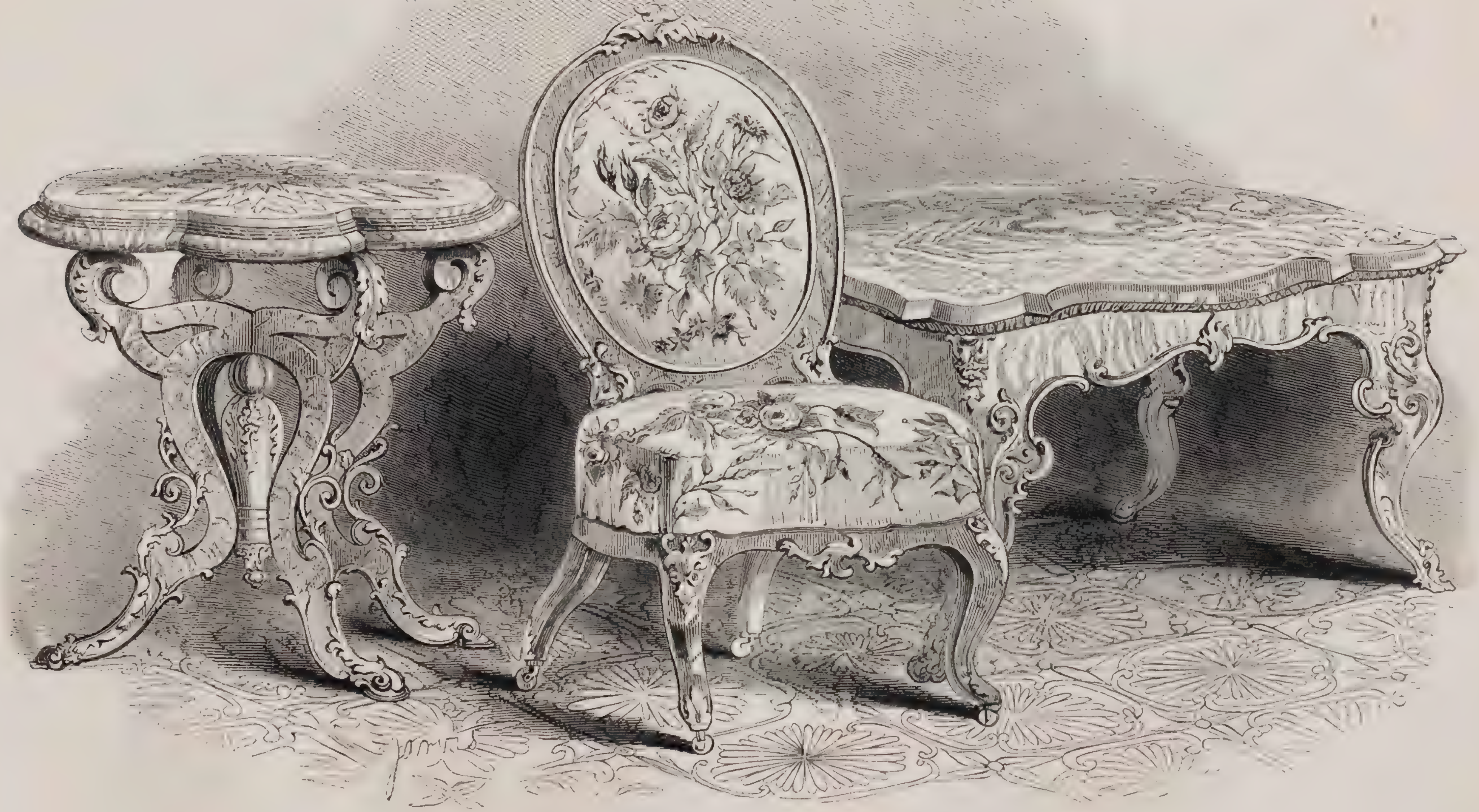
* A richer bed has been recently worked higher up near a morass, at the source of the Tramganka. A bed of short rubble lies immediately under the surface, and above two layers, one of yellow and the other of brown clay. Where the clay was in contact with the coarser layers of pebbles, the yield of gold was about $\frac{1}{200000}$; while the finer gave $\frac{1}{27000}$, and even so much as $\frac{1}{1000}$ of the weight of mineral. Platinum was found at the same time, and it is said cinnabar also. The greenstone here was much less compact than that of Kushna, its specific gravity being only 2·674.



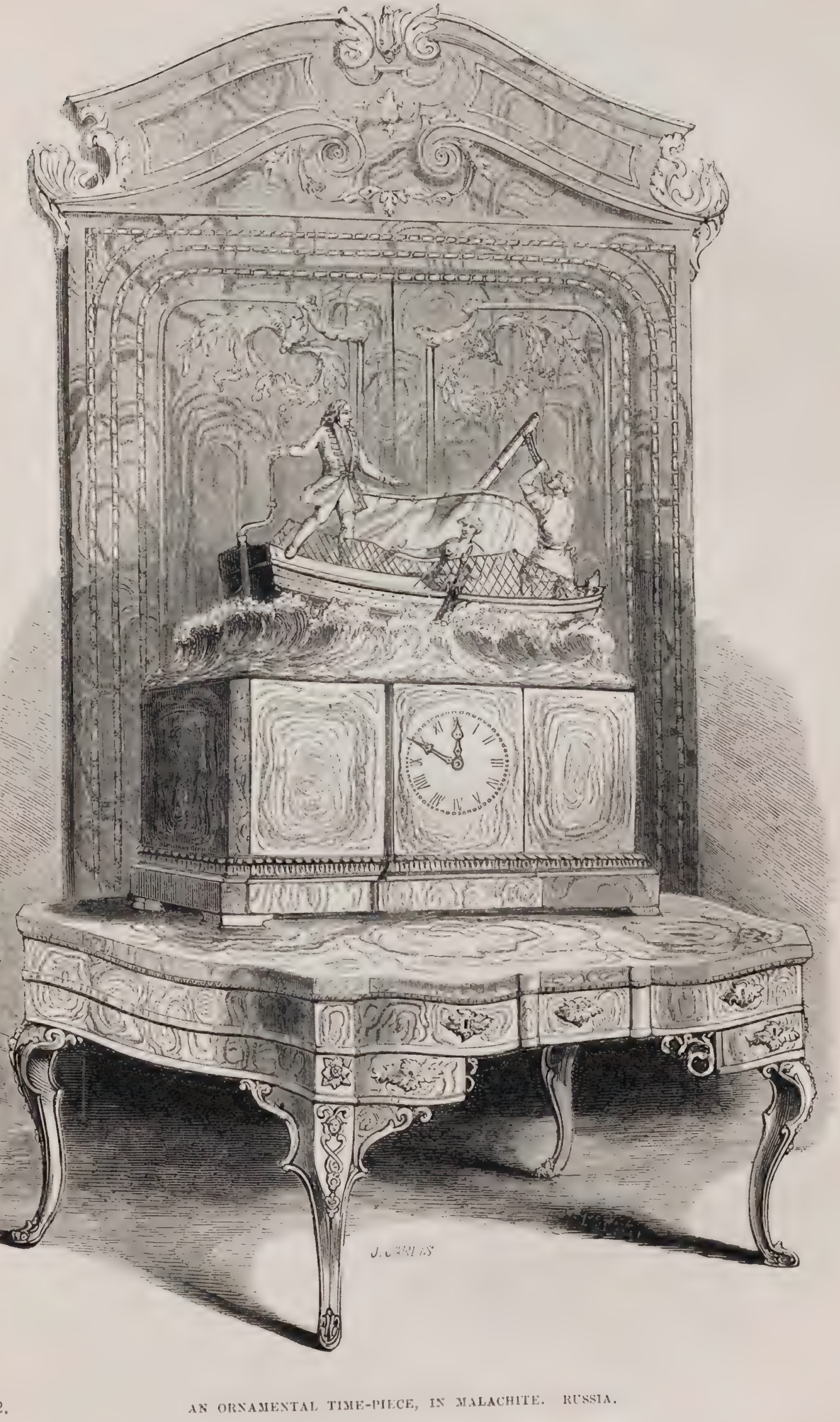
271. VASE IN MALACHITE. MESSRS. DEMIDOFF. RUSSIA.



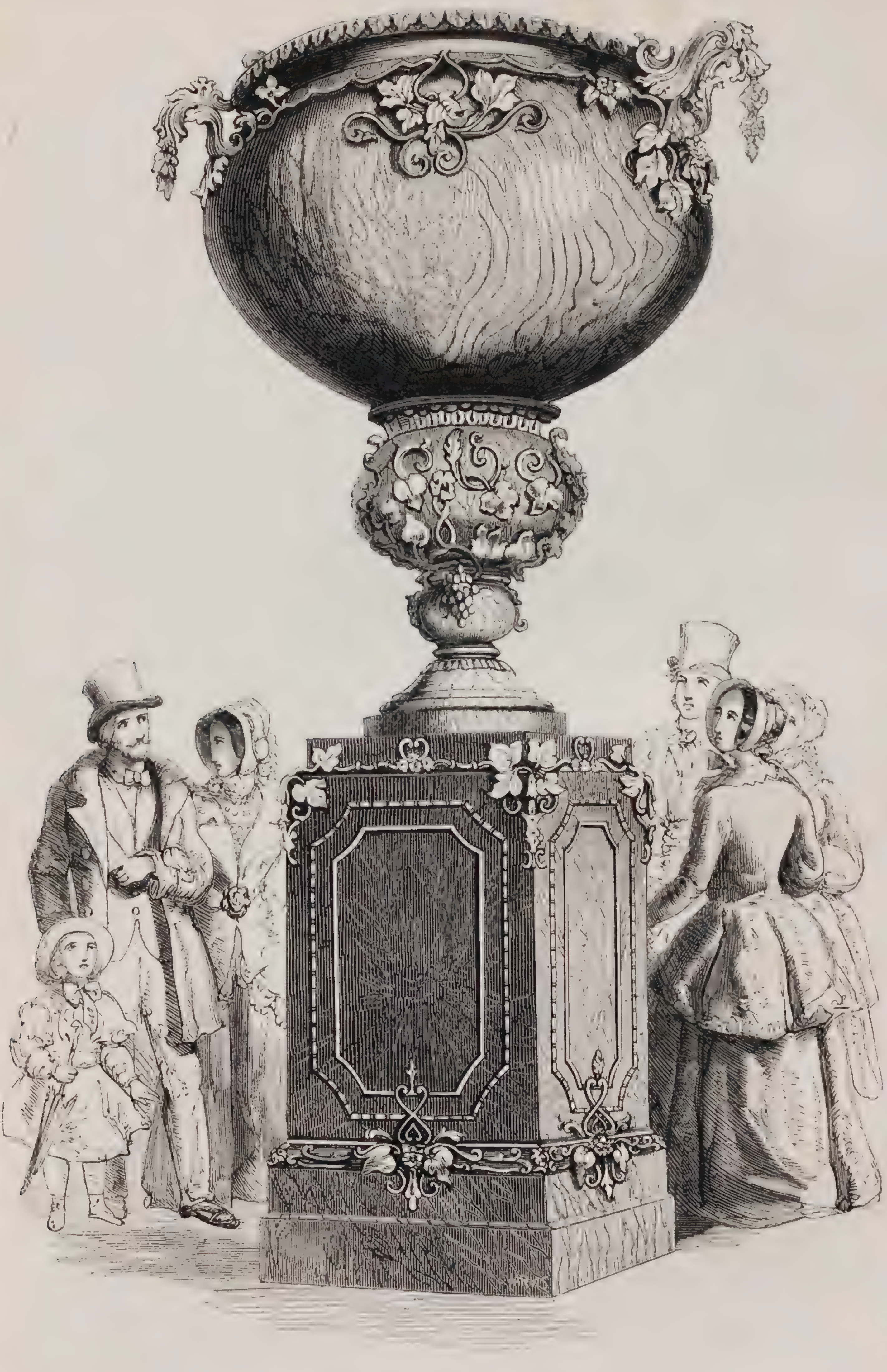
189. LARGE VASES OF MALACHITE. MESSRS. DEMIDOFF, RUSSIA.



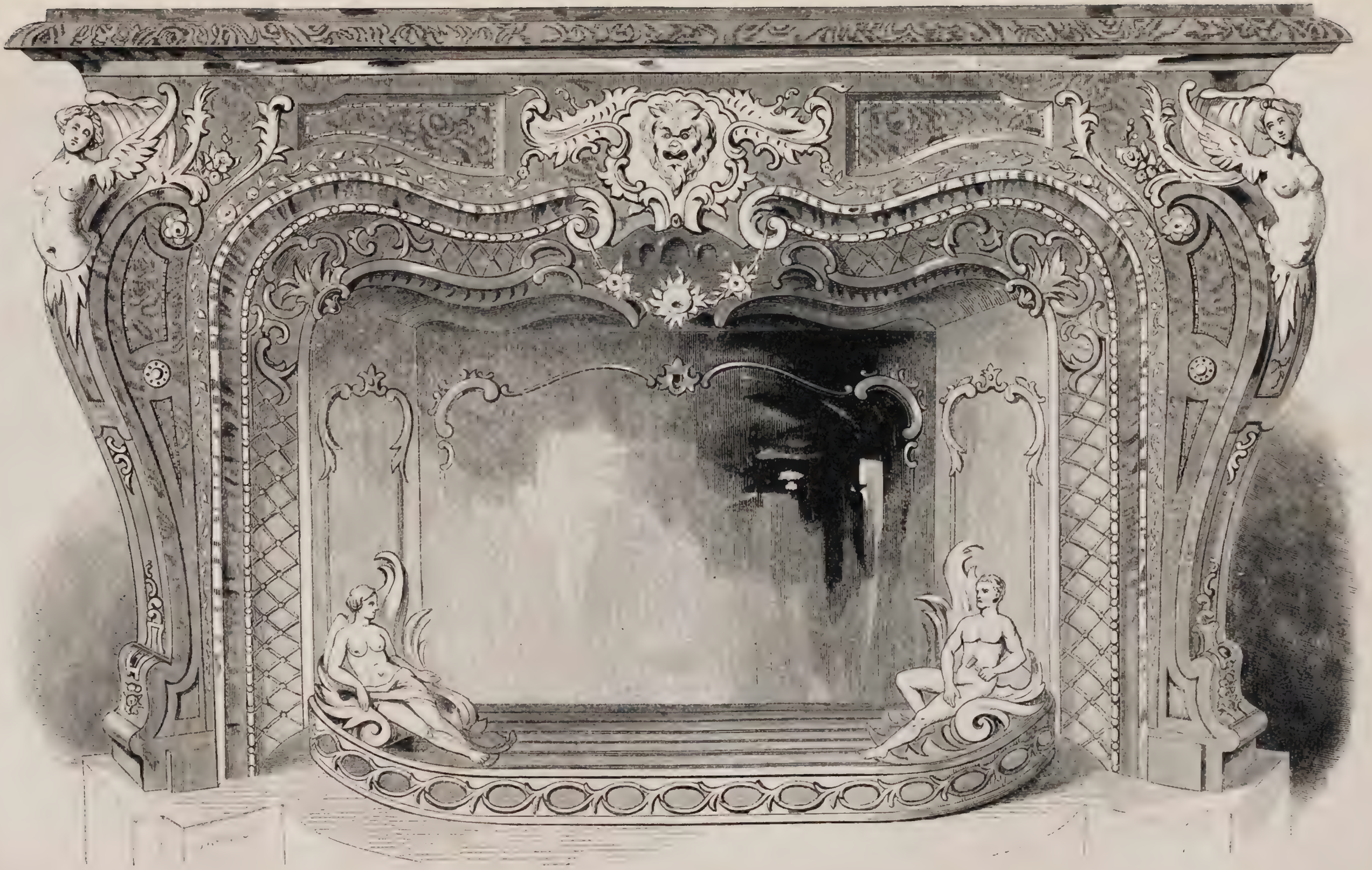
195. A CHAIR AND TABLES, FORMING PART OF A SUITE OF FURNITURE, IN MALACHITE. RUSSIA.



192. AN ORNAMENTAL TIME-PIECE, IN MALACHITE. RUSSIA.



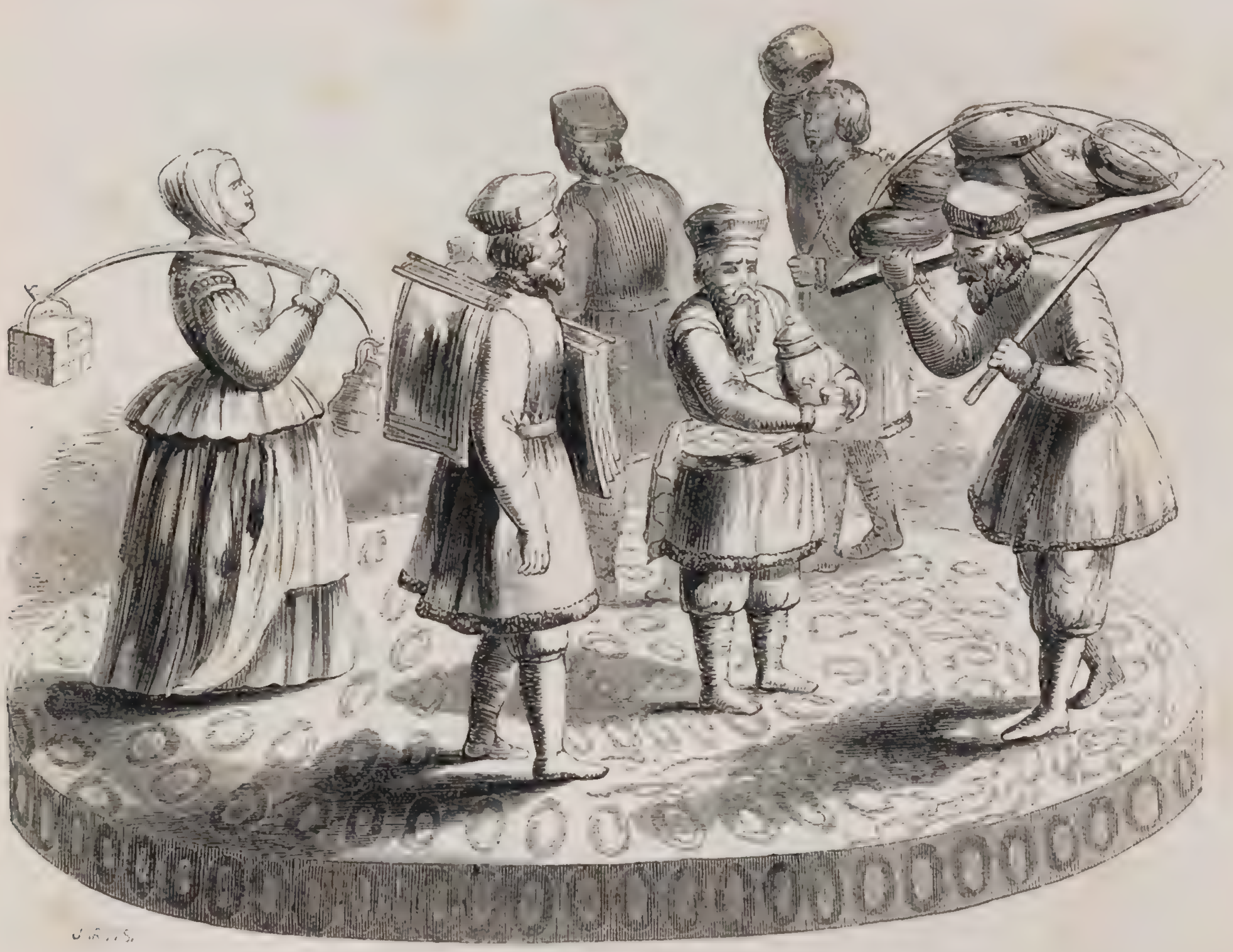
193. A LARGE VASE, IN MALACHITE. RUSSIA.



189. A FIRE-PLACE, IN MALACHITE AND ORMOLU. MESSRS. DEMIDOFF. RUSSIA.

both sides of the river, and seen that the platinum was collected from the detritus of the rocks, which are tipped with granite, in the usual reniform grains, we returned." A very productive bed of grains of platinum was discovered a few years ago by Professor Hansteen and M. Erman, on the banks of the Cherna, near its confluence with the Tagil, in a valley to the south-west of Shaitansk.]

The following woodcut, and the accompanying Plates, illustrate several portions of the beautiful articles made of malachite.



Figures in Silver and Malachite.

[The magnificent works executed in malachite, and exhibited by the Messrs. Demidoff, the proprietors of the principal mine and manufactory of the stone, far surpass in magnitude and excellence the finest that had before been seen out of Russia. The best and most costly of the objects exhibited is the pair of doors, measuring 14 feet 5 inches high, and 7 feet wide. They are built upon a framework of metal, the malachite being veneered in thin slices about a quarter of an inch thick. But the chief peculiarity of the manufacture consists in the ingenious way in which the cut pieces of stone are adapted to each other so as to form a pleasing and appropriate pattern, and cemented by a very coarse cement made of fragments of the stone itself, and coloured in the same way. The magnitude of each piece of malachite is very inconsiderable, any single object being made up of hundreds, or even thousands of pieces, cut into a fit shape. In this way a large proportion of the whole is absolutely lost; and as the finer pieces are of considerable value, the cost of material is thus very considerable in addition to the great labour. Some idea may be formed of the latter, when it is stated that in addition to the labour of cutting and partly fitting the pieces, it occupied as many persons as could be employed on the doors (30 men) a full year to fit, finish, and polish them. The total quantity of labour employed was, however, much greater than would thus appear, since the work went on day and night without ceasing during the whole time, from the 1st May, 1850, to the beginning of May this year. The vases and chimneypiece of the same manufacture are hardly less valuable and magnificent than the doors, and the whole value of these goods is stated at nearly 18,000*l*. There are a number of smaller articles of less importance, but still of a degree of beauty and finish rarely seen in this country.

The lumps of native gold and platina exhibited by the Messrs. Demidoff are remarkably fine—the latter especially, which are rarely seen of such large size. The platinum weighs in all nearly 70 lbs. avoirdupois.—D. T. A.]

325 LIKHACHEFF, P., *St. Petersburg*—Manufacturer.

Gold-plated and silver-plated epaulettes. Silver shoulder-knots.

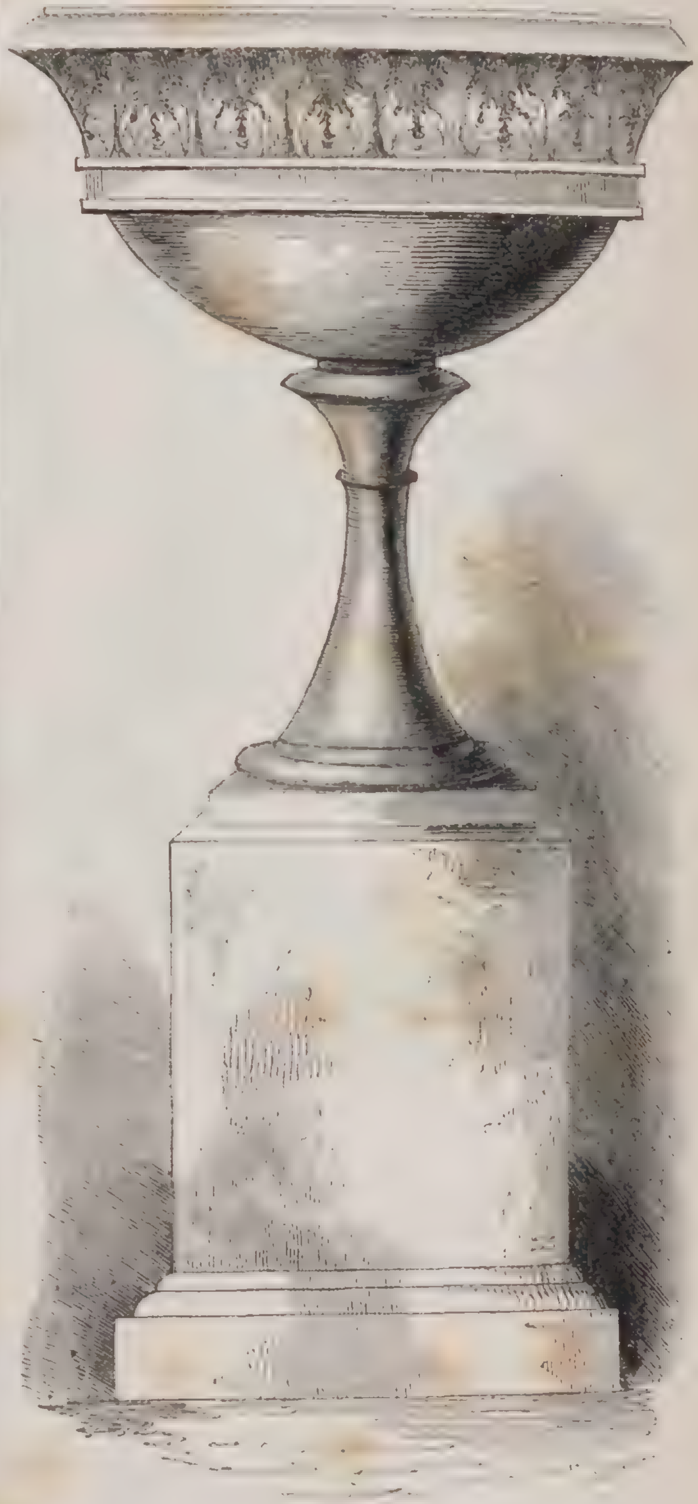
326 IMPERIAL POLISHING MANUFACTORY OF EKATERINBURG, *Government of Perm.*

Bordered vase of greenish jasper, three feet high. This vase is represented, together with a large candelabrum, in Plate 100.

["The next interesting proof that we discovered," observes M. Erman, "of the industrial activity and resources of the Ural was in the quarries on the banks of the Iset, which are worked by the Government. The stupendous columns, capitals, and vases, which are produced there from the hardest materials, may be justly said to surpass any similar works of ancient art in point of execution. All sorts of figures in relief, curvilinear ornaments, and foliage, are carved with as much ease, by gravers revolving on axes, as simple cylindrical surfaces have been turned heretofore. The mechanism of the lathe has been so ingeniously and effectively applied to the operations of the graver, that the cutting disc in which it terminates is rendered instantaneously available for every form of arrangement of ornamental carved work. While the axis of the cutting tool remains fixed in the ordinary lathe, the workman, here, is provided with a sort of box-rest, opening and shutting by a hinge, which enables him to adjust his graver to any distance, or in any direction he may require. The usual construction of an endless belt, connecting the wheel and the extremity of the axis bearing the graving tool, is preserved. But a difficulty arose in this case, from the changes in the position of the revolving axis, which was left for Russian ingenuity to overcome. The belt should have the property of accommodating itself to the variations in the distance between the wheel of the lathe and the tool directed by the workman. The contrivance adopted for this end may be readily understood from a brief description. Three pulleys, round each of which the belt makes two turns, revolves, each upon an axis fixed in the usual way, in vertical boards, which, at the same time, contain the fulcrum of a bent lever. A fourth pulley, on one end of this lever, is kept steadily pressed by a weight on its opposite end, against the belt, which makes only a single turn on it, and embraces it, within certain limits, in whatever direction the hand of the workman may be held. The course of the belt, from the water-wheel by which it is roved to the graving-tool, requires no further notice. There are other instances, also, of clever mechanical adaptation in the adjustment of the several parts of the machinery. To prevent the wearing of the belt against the rest, when worked obliquely upon the axis of the cutting-tool, each edge of the opening of the box is protected by a number of closely-fitting copper sheaves, whilst the axis is also provided with a similar arrangement; so that, when the belt leaves one sheave, it may catch upon another. The rapidity of the rotation of the lathe is controlled by the size of the pulleys. The two parts of the rest-box are held together by a ring, placed upon a conical projection on its fore-side. A number of these lathes, fixed in different parts of an extensive building, are set in motion at once by a water-wheel driven by the Iset. The metal discs used in dividing the blocks of stone, in the first instance, derive their motion from the same power; as do also the several pieces at times when the operations of cutting and polishing their surfaces require it. Copper, and even leaden discs, are indispensable in working the hardest stones; and it is only for economy that iron is used at all; for the softer the metal, the more rapid is the action of the emery powder with which it is covered. By this application of machinery to the instruments used in cutting and polishing, not only is a very considerable economization of time effected, but even the saving in the expense of labour amounts to 8,000 roubles yearly; while some operations that were before impossible are now easily performed. The size of the objects to be produced was formerly limited by the natural strength of the artist; whereas works of colossal dimensions, which it was heretofore only possible to accomplish by piecemeal, are, at present, completed in a monolith."]

327 **IMPERIAL POLISHING MANUFACTORY OF KOLYVAN**, *Government of Tomsk.*

Square bordered vase of grey violet jasper, on a pedestal of the same material, two feet six inches square, four feet eight inches high, including the pedestal. This vase is represented in the annexed cut.

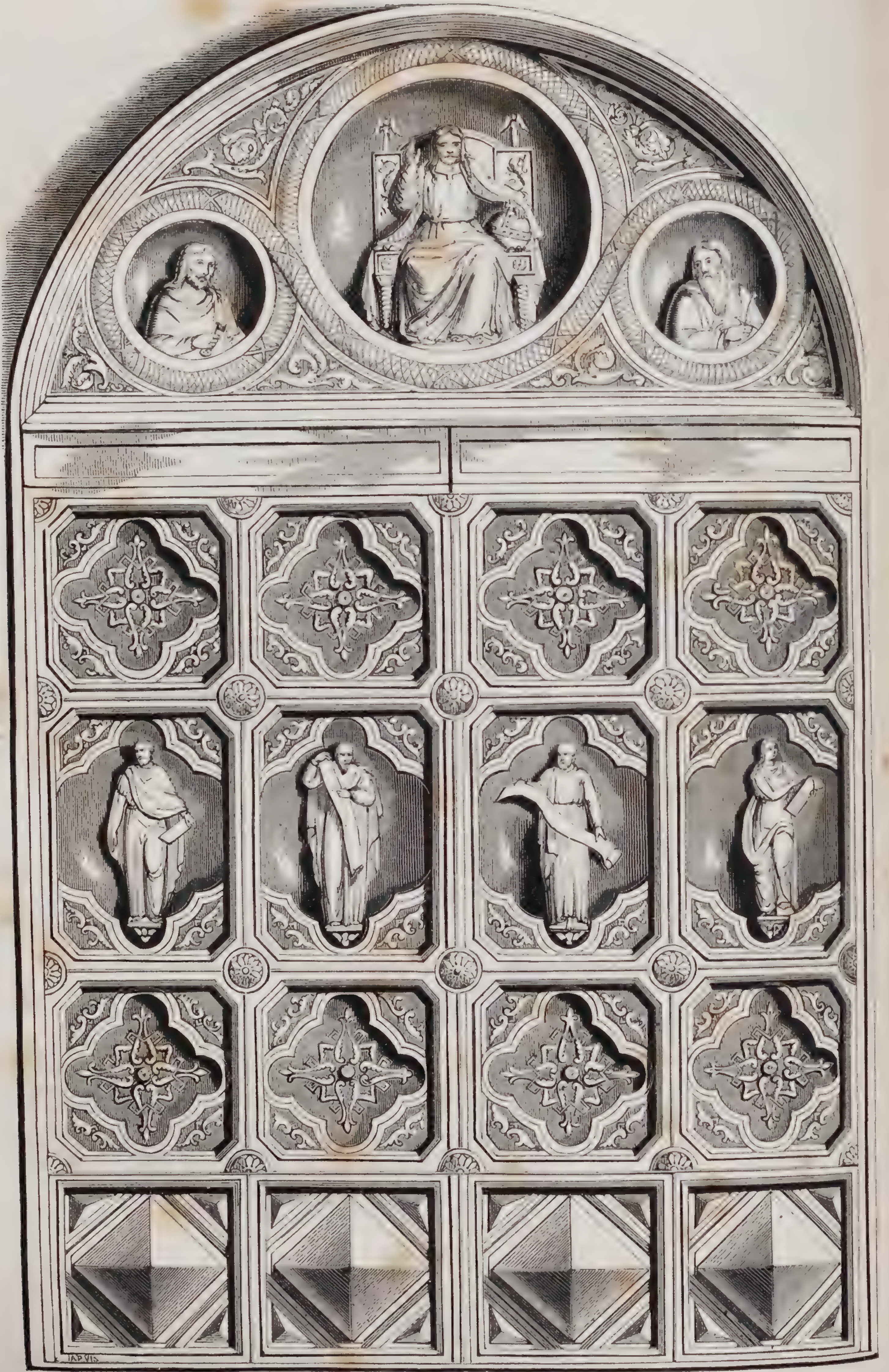


Vase of Violet Jasper.

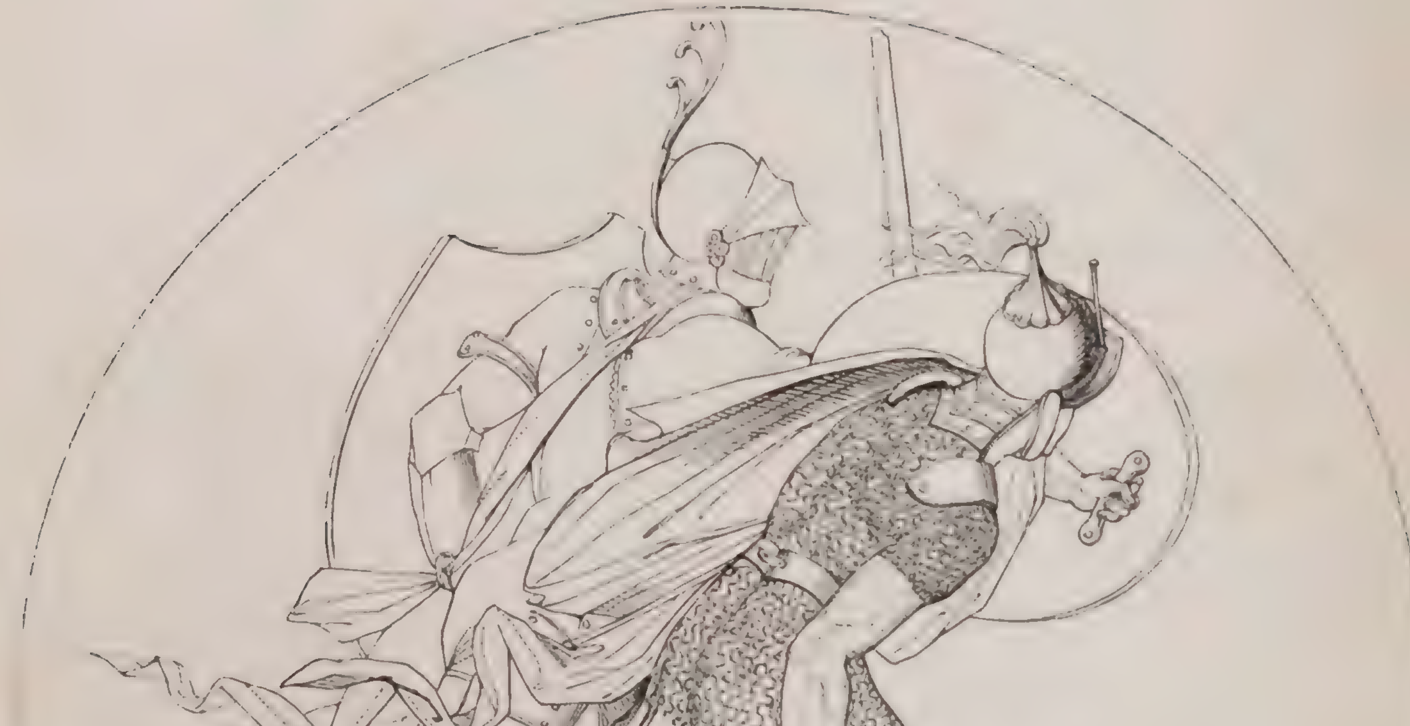
Square vase of green marbled jasper, two feet two inches wide, one foot ten inches high.

Vase of green marbled jasper, three feet two inches high.

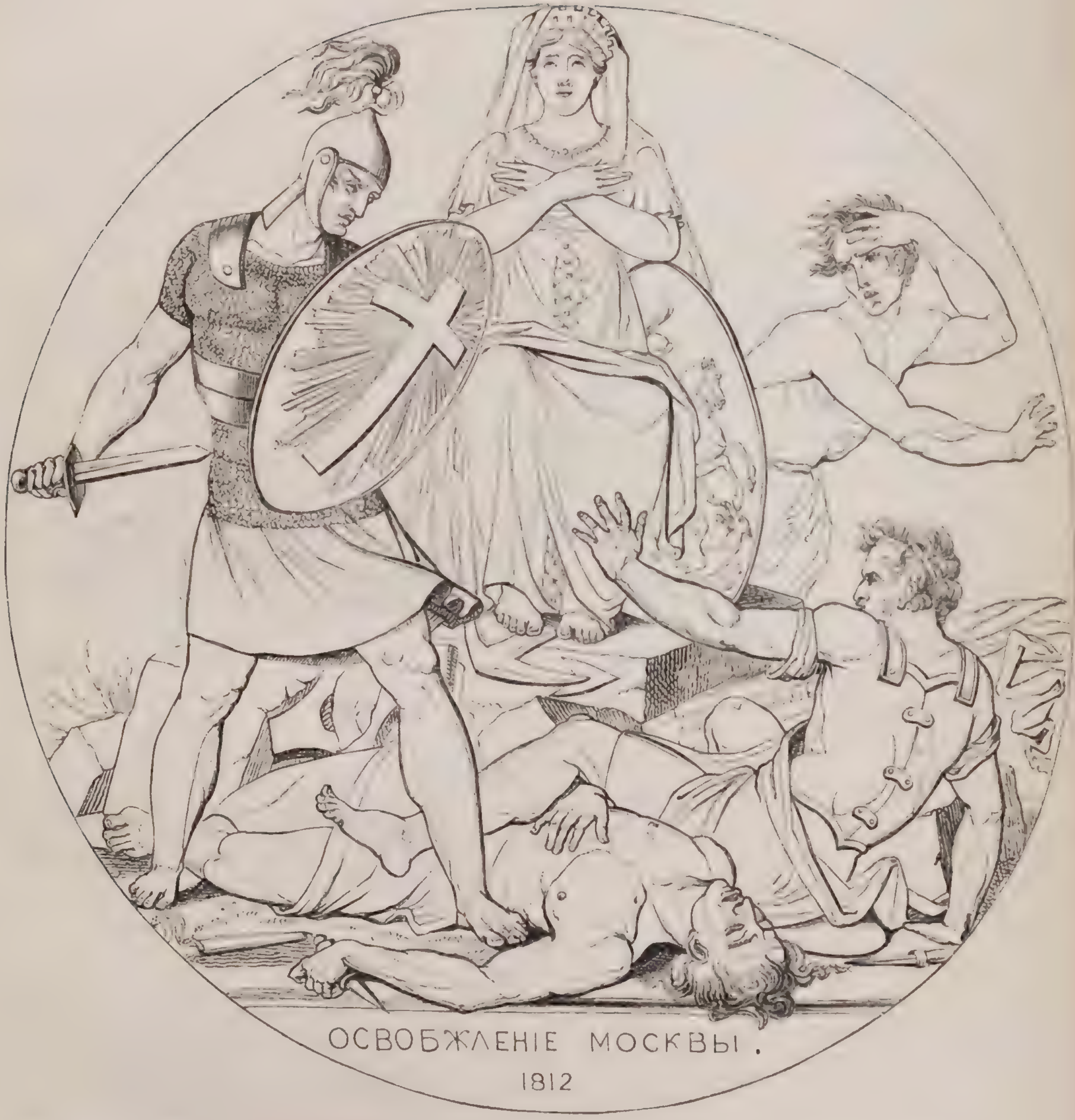
[The manufacture of vases and other ornamental objects from jasper, quartz, and other extremely hard rocks, has long exercised the ingenuity of the people of some parts of Russia, and is carried on chiefly in the Imperial polishing manufactures of Perm and Tomsk. The mineral is generally excessively hard and tough, almost always quartzy in its texture and composition, having in most cases a somewhat dull opaque surface, coloured sometimes uniformly, but much more commonly in bands. The true jaspers are probably in many cases altered schists; but some porphyries, and various other quartzy rocks, are so commonly associated with them under the same name,



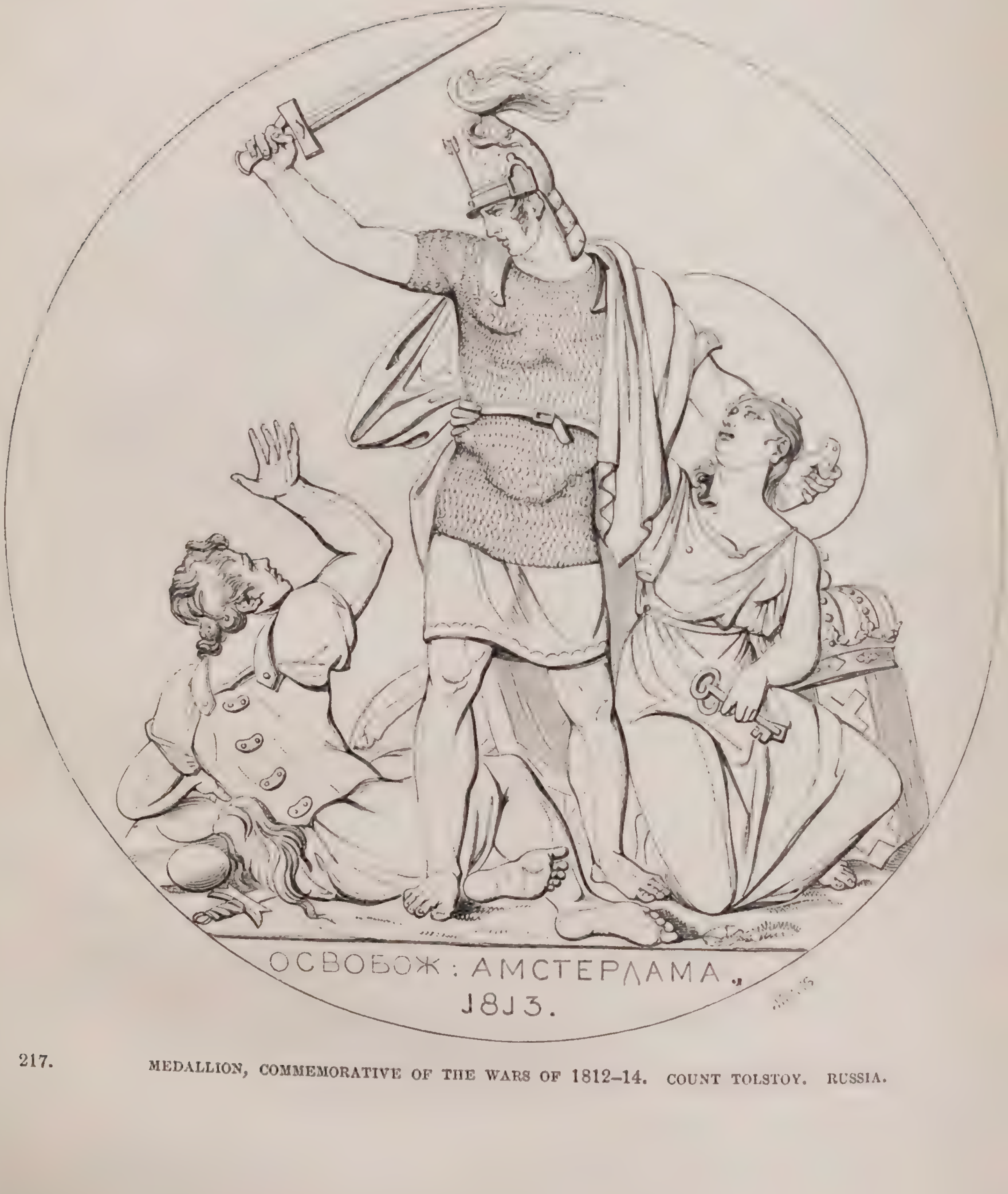
MODEL OF DOORS. RUSSIA.



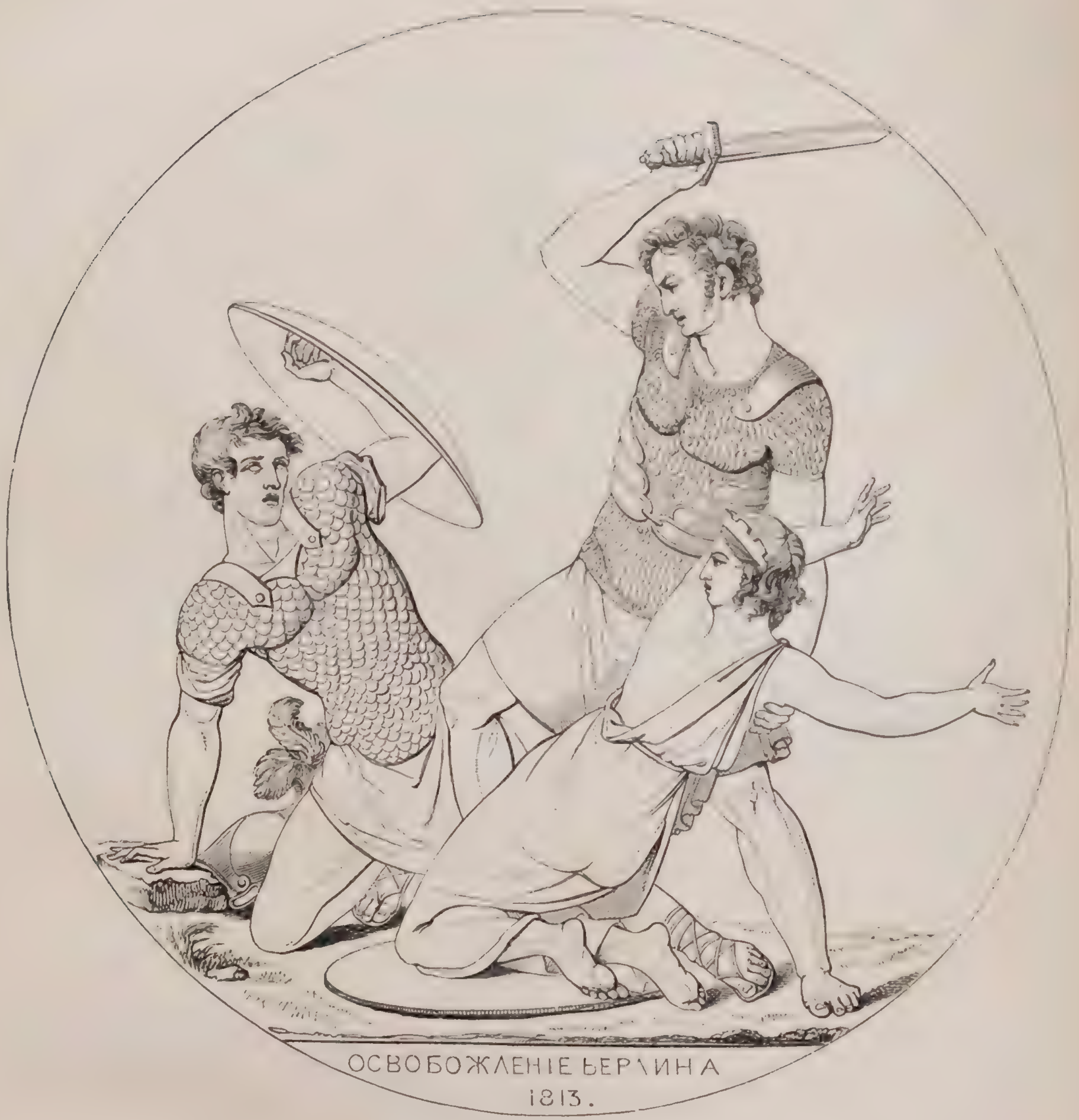
219. MEDALLION, COMMEMORATIVE OF THE WARS OF 1812–14. COUNT TOLSTOY. RUSSIA.



218. MEDALLION, COMMEMORATIVE OF THE WARS OF 1812–14. COUNT TOLSTOY. RUSSIA.



217. MEDALLION, COMMEMORATIVE OF THE WARS OF 1812–14. COUNT TOLSTOY. RUSSIA.



216. MEDALLION, COMMEMORATIVE OF THE WARS OF 1812–14. COUNT TOLSTOY. RUSSIA.

that it is difficult to define very exactly the meaning of the term. The jaspers are obtained from the Ural mountains, at various places, of which Orsk, in the district of Orenburg in Siberia, has been long celebrated. Others are obtained from the mountains near the river Korgon in the Altai, where there is a mass of jasper, 300 feet thick, reposing upon red porphyry.—D. T. A.]

328 TOLSTOY, COUNT T., *Vice-President of the Imperial Academy of Fine Arts, St. Petersburg*—Sculptor.

Galvano-plastic cast of a medallion, representing his Imperial Majesty the Emperor Nicholas I., in the ancient costume of a Slavonian warrior.

Galvano-plastic casts of bas-reliefs, representing subjects from Homer's Odyssey.

Metallic dies, being allegorical compositions from the events of the wars of 1812-13-14.

Medallions in plaster, being allegorical compositions from the events of the wars of 1812-13-14.

The acompanying plates represent some of these medallions.

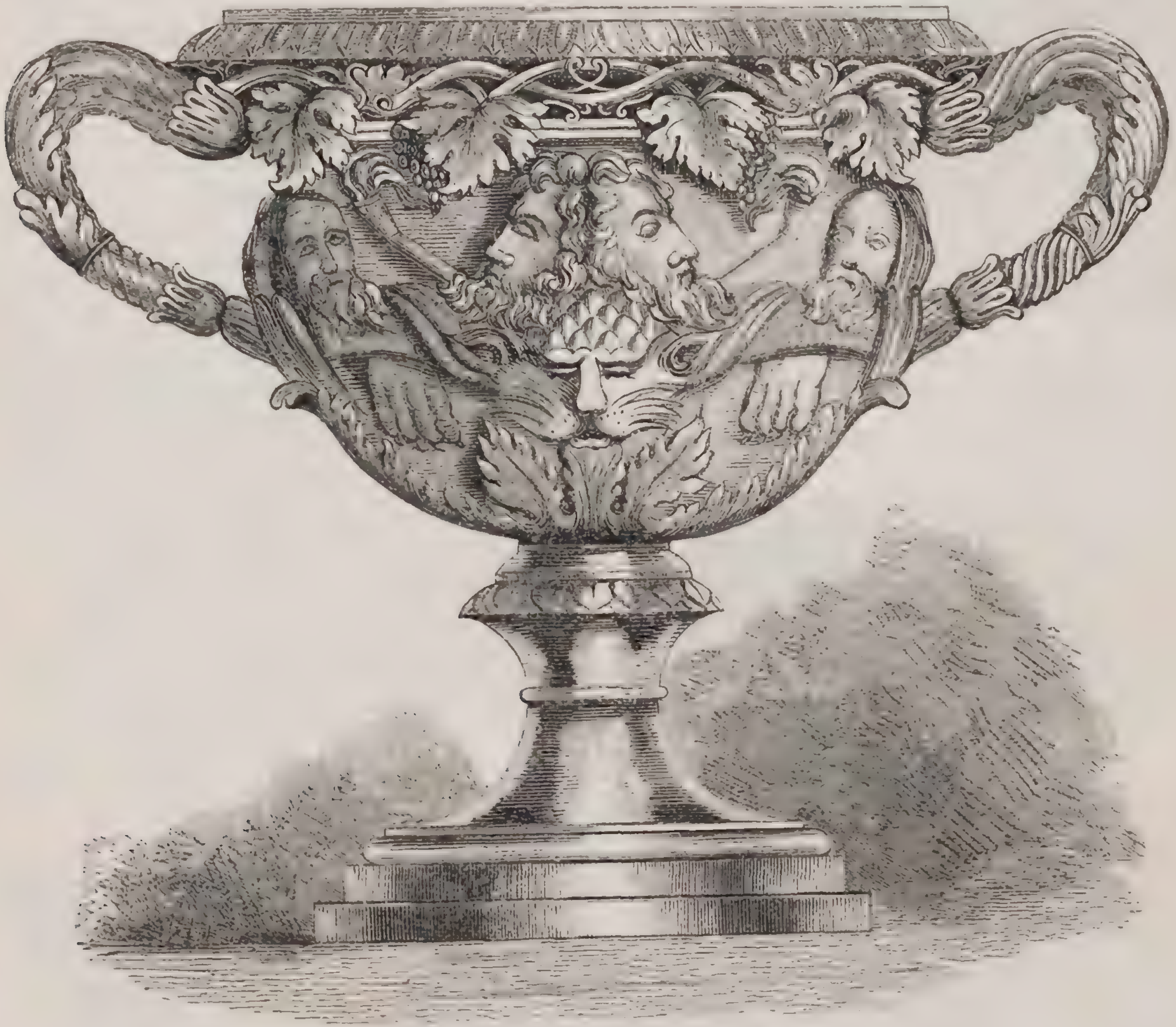
Galvano-plastic cast of a model of the entrance doors of our Saviour's Cathedral, now in construction at Moscow; from this model, four doors of colossal dimensions (about 30 feet English in height) have also been executed by Count Tolstoy.

Galvano-plastic cast of a bas-relief, representing the Virgin with the Infant Jesus, executed in colossal dimensions, by Count Tolstoy, for the upper part of one of the doors of the same cathedral at Moscow.

Twelve medals in gutta percha, commemorative of the Turkish and Persian wars.

329 HEKE, DANIEL, *Warsaw*—Manufacturer.

Copy of the Warwick vase in copper, hammered, not cast. This vase is represented in the annexed cut.



Model of Warwick Vase in beaten Copper.

[This work deserves to be carefully examined, and will be found well worthy of notice as a specimen of the finest copper, and a proof of the extreme malleability of that metal, as well as an excellent work of art. Copper is not usually hammered into works so complicated in form, and it is rarely with us that the metal can be obtained in a state that admits of it. The copper of Russia is, however, remarkably pure.—D. T. A.]

330 VSEVOLOJSKY, —, *Government of Perm, district of Solikamsk.*

Medium sheet iron. Sheet iron for roofing.

330A BELITCHEFF, —, *St. Petersburg*—Merchant.

Hair dye.

331 ABASHEFF, NICOLAS, *Government of Smolensk.*

Dried potatoes and potato flour.

332 DAVIDOFF, BAZILE, *Government of Tamboff, district of Morschansk, estate of Kulevatovo*—Proprietor.

Oat grits.

Rye flour, sifted through copper sieves, and of superior quality, sifted through silk.

333 PAVLOFF, NICHOLAS, *Government of Saratoff*—Proprietor.

Wheat (called *Koubanka*).

334 PROTASSOFF, ALEXANDER, *St. Petersburg*—Manufacturer.

Snuff, cigarettes, and cigars.

335 **Jasnopolsky, John Koukell**, *Government of Kharkoff*—Manufacturer.

Beet-root loaf-sugar.

336 **Stchegloff, —**, *Government of Vladimir, district of Alexandrovsk, Margaretinsk Chemical Works, superintended by Mr. Bess*—Manufacturer.

Manufactured alum.

337 **Konovnitzin, Count John**, *Government of Kharkoff, district of Akhtirsk, estate of Nikitoffka.*

Fleece of three years' old sheep.

338 **Nikita Vsevolodowitch Vsevolojskys**, *Government of Astrachan.*

Different sorts of dried fish.
Isinglass of various fish. Caviar.

339 **Erchoff, Alexis**, *Moscow*—Manufacturer.

White, bronze, grey, and black bristles (called *Okatka*).
Bristles of various qualities.

340 **Jadenoffsky, Bazile Koudriaffzeff**, *St. Petersburg*—Manufacturer.

Horse-hair from tail, white, washed and unwashed.
Black horse-hair from the tail, various lengths.
Horse-hair from mane, white, transparent, or opaque, 28 and 30 inches long.
Horse-hair for furniture, twisted, black, grey, and white.
Horse-hair, untwisted black.
Pigs' hair, twisted, untwisted, and washed.

341 **Roch, Lewis**, *St Petersburg*—Manufacturer.

Surgical instruments, viz.:
Osteotome, for sawing bones.
Instruments for operating on the eye.

342 **Rosinsky, Theodore**, *St Petersburg.*—

Patent apparatus, to be employed instead of leeches.

343 **Zeitler, Michael**, *Government of Radm, district of Olkoushsk, estate of Dombrovo.*

Samples of wire, nails, and screws.

344 **Jakoleff, Peter and John**, Brothers, *St. Petersburg.*

Droshki for one person.
Sledge for winter races.
Harness, silver mounted.
The droshki is represented in the cut annexed.

345 **Babounoff, Basile**, *St. Petersburg.*

Droshki for one person.
Sledge for winter races. Harness.

346 **Touliakoff, Brothers**, *St. Petersburg.*

Droshki for two persons.

347 **Skalkin** (Peasant), *Government of Tver, district of Rjeff, estate of Mouravievo.*

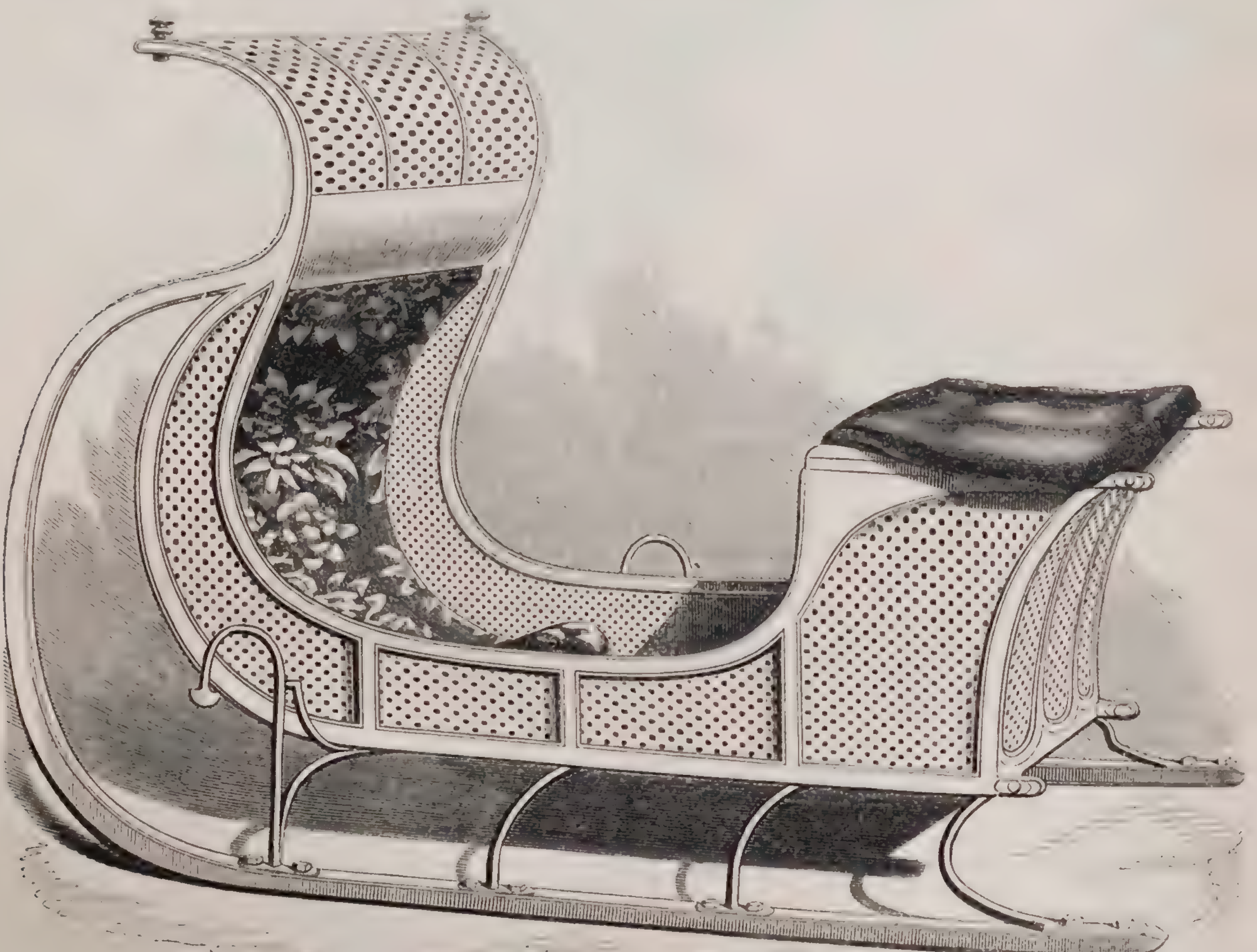
An axe.

348 **Obroutcheff** (Military Governor), *Government of Orenburg.*

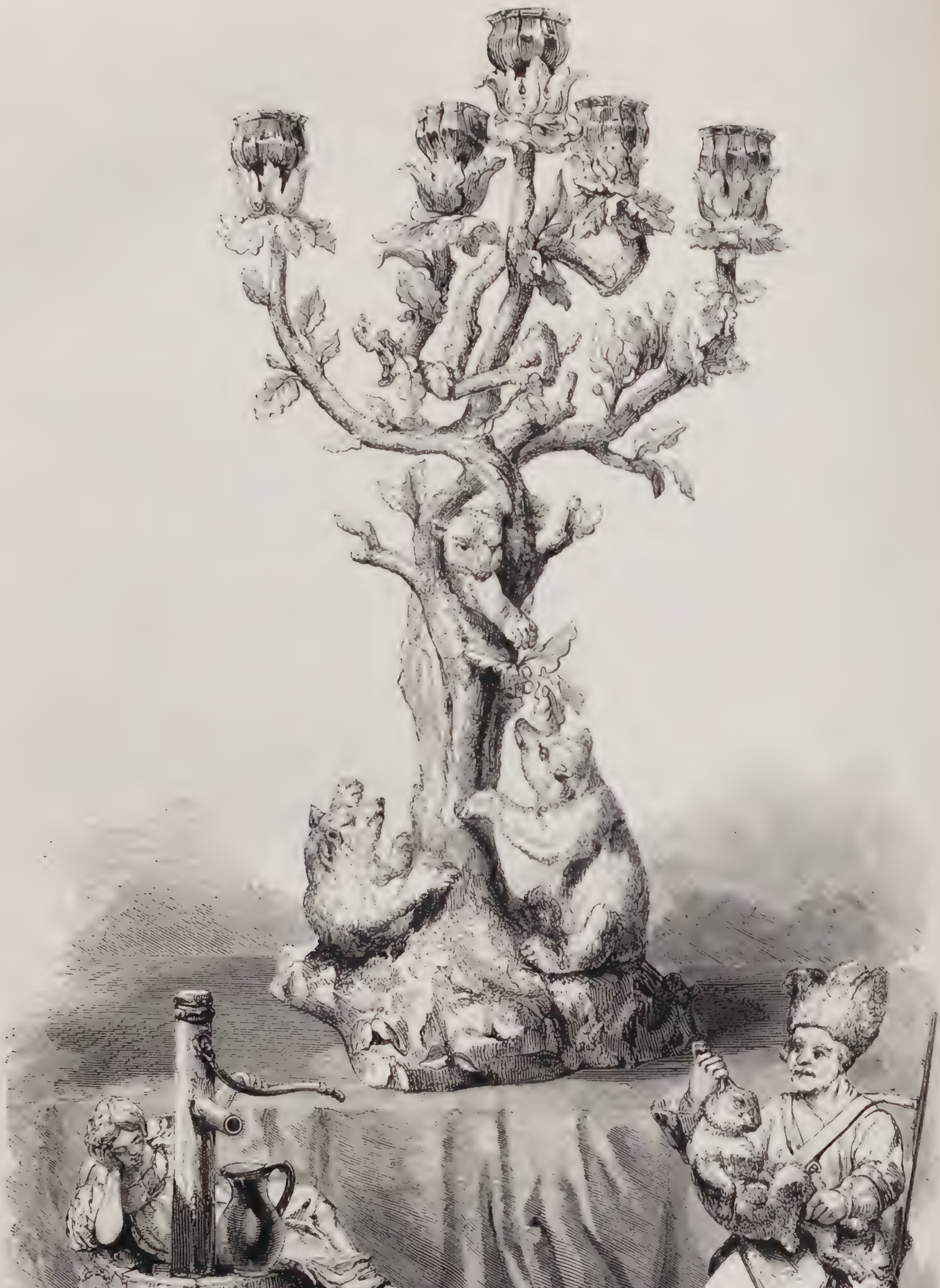
A column of rock salt from Iletz.

349 **Prokhoroff Brothers**, *Moscow*—Manufacturers.

Pieces for wrappers and dressing gowns. Coloured and plain blue shawls. Coloured shawls, cambric, chintz, and cashmere.

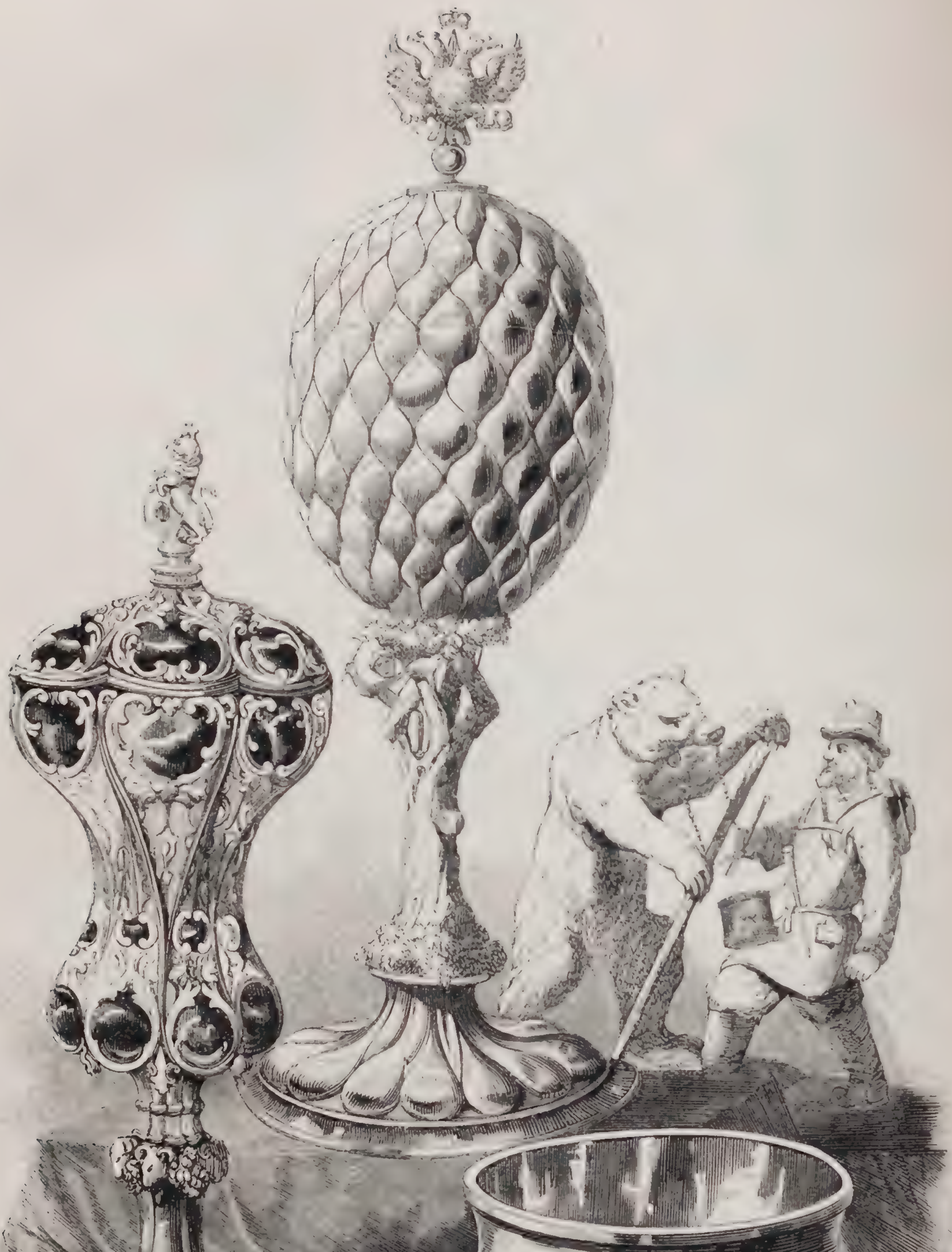


Droshki, for one person.



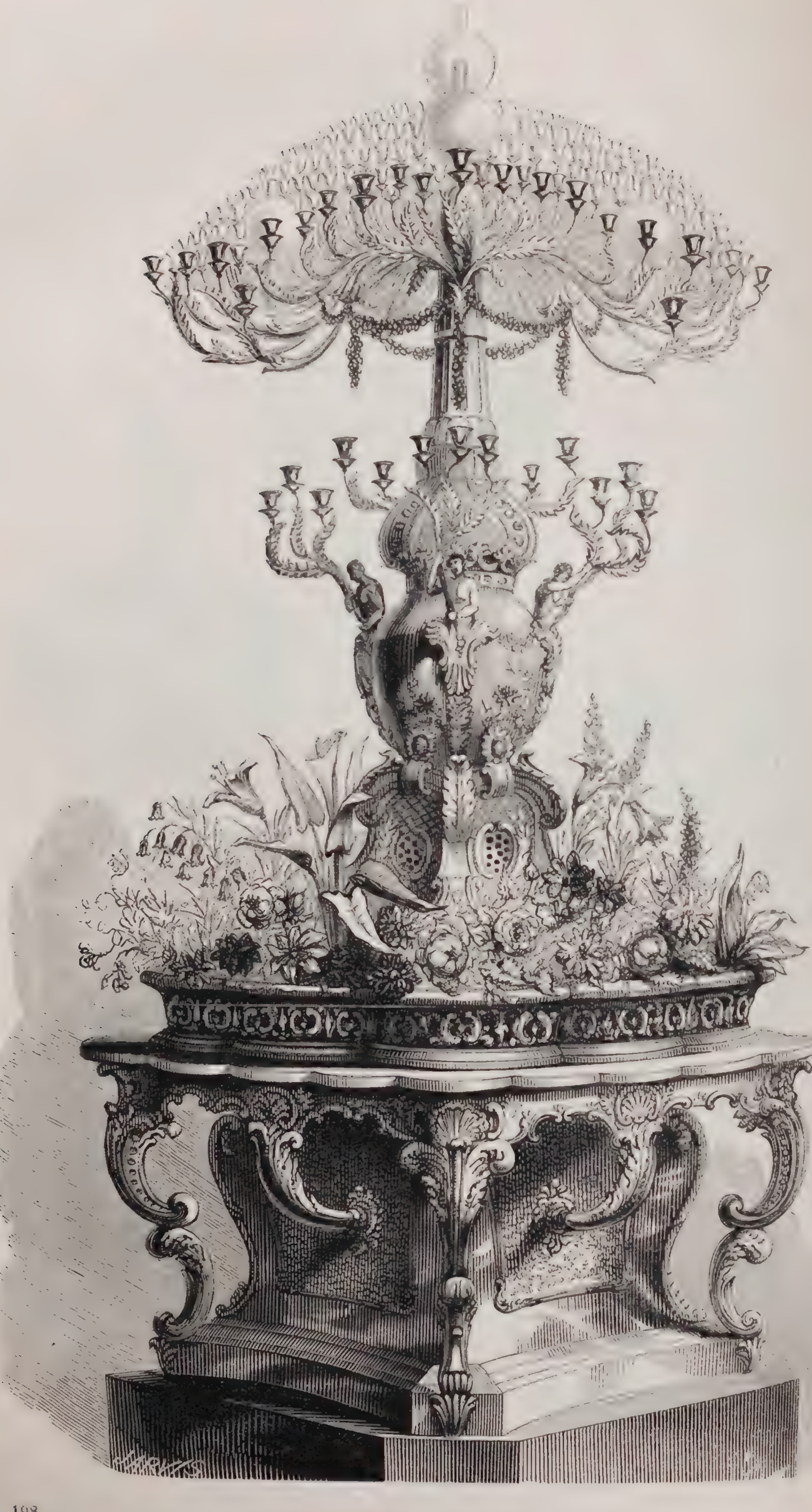
210.

CANDELABRUM AND TWO GROUPS, IN SILVER. RUSSIA.

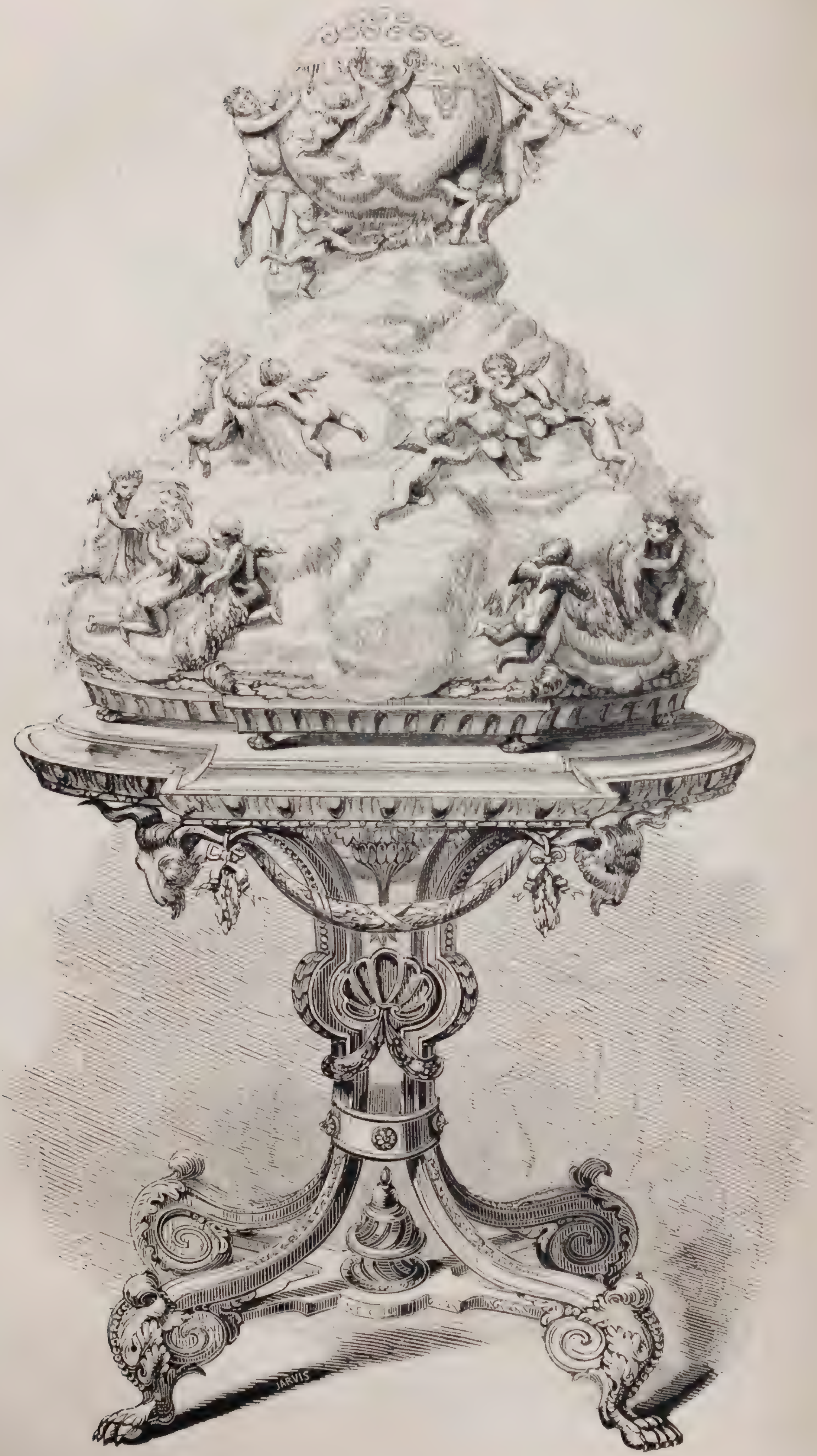


209.

SPECIMENS OF ARTICLES OF GOLD AND SILVER PLATE. RUSSIA.



LARGE CANDELABRUM, IN ORMOLU. RUSSIA.



196. A CLOCK AND STAND. THE DESIGN OF THE CLOCK REPRESENTS THE ASCENT OF THE FIRST BALLOON. RUSSIA.

350 Peasants of the Estate of Bedino, *Government of Radom, district of Opotchno*—Producers.

White and grey cloths for peasants' dresses.

351 Fielder, Adolphus Gustavus, *Upatovka, near Kalish.*—Manufacturers.

Samples of black and dark-green cloth.

352 Varen, A., *Government of Tavisthousk, parish of Tamel.*

Dark blue cloth made of Finland wool.

353 Kondrasheff, —, *Government of Moscow, district of Bogorodsk.*

Pieces of fancy silks and damasks, viz. :—

Etoffe brodé. Gros Victoire. Chiné orientale. Daas. Brochet. Du Barri. Satin quadrillé. Printanière. Gros de Naples quadrillé. Gros de Cosack.

Patterns of furniture damask.

Shawls. Silk woven portraits.

354 Soloveiff, John, *Government of Moscow, district of Bogorodsk*—Manufacturer.

Patterns of velvets of different qualities, and various colours. Silk and cotton velvet. Velour épinglé.

355 Dombrowitch, Charles, *Government of Augoustow, district of Mariampol estate of Dobrowola.*—Producer.

Samples of linen. Different sized table cloths.

Napkins. Breakfast and dessert cloths, white and grey.

356 Dolgoroucky, Prince Nicolas, *Government of Smolensk, district of Gjatsk, estate of Dmitrievsk*—Proprietor.

Leather for boots. Sole leather, Russia leather, white and black.

357 Shechtel, Frank, *Saratoff*—Merchant.

Embroidered carpet.

358 Prascovia, Olga, Maria, Apolinaria, and Alexandra Bondarevsky, *Orenburg.*

Shawl, made of goat's hair, and presented by the above-named to H. I. M. the Empress of Russia, who has been graciously pleased to send it for exhibition.

359 Aristarkhoff, —, *Government of Kalouga, district of Borovsk*—Manufacturer.

Writing and post paper. Coloured paper of different sorts.

360 Riabzevitch, *St. Petersburg*—Manufacturer.

Quills purified after a chemical method invented by Mr. Zell. Made pens in boxes.

361 Revillon, —, *St. Petersburg*—Manufacturer.

Specimens of the types of the twelve dialects in use in Russia.

362 Dregger, Frederic, *Moscow*—Artist.

Chromolithographies of the antiquities of the Russian Empire.

363 Associated Company of Moscow, for Manufacturing Stearine Candles, *Moscow.*

Stearine candles. Samples of stearine.

364 Stier, Hugh, *Warsaw*—Manufacturer.

Samples of toilet soap.

365 Chopin, *St. Petersburg*—Manufacturer.

Bronze candelabrum for 81 candles, and 4 carcel lamps, on a wooden carved and gilt pedestal, about 15 feet high, and 7 feet wide at the base.

Bronze clock, in the style of Louis XVI., ornamented with a group of 33 figures, on a bronze pedestal, about 5 feet high, and 3½ feet wide at the base.

Bronze mounting for a round porcelain table, the slab of which was manufactured at the Imperial Porcelain Manufactory, 4 feet 8 inches in diameter.

A winged figure, 1 foot 2 inches high, being a specimen

Figures of Russian Peasantry in Silver.

of the first essay of galvanic gilding, executed in Russia in 1841 by the Academician Jakobi.

The accompanying Plates represent several of these articles.

366 Sazikoff, Ignace, *Moscow*—Manufacturer.

Large vase for centre of dinner table (pièce du milieu), with a group representing Dmitri Donskoi after the battle of Koulikoff.

Two large candelabra with bears.

Cups, Byzantine style, and pine-apple shape. Goblets. Drinking-pot, with spout (called *endova*). Large goblet, with wolves' heads. Vase and goblet, ancient Russian style. Drinking-horns, gilt and plain. Drinking-cups (kovsh). Inkstand. Bell.

Goblets representing a Cossack woman; a Finnish hunter; a girl looking at herself in a well; a milk-woman.

Letter-presser, representing dancing bear and peasants.

The accompanying Plates and preceding cut represent several of these characteristic objects.

367 Matvieff, Peter, *Moscow*—Manufacturer.

Figured cashmere, drill, plain, and striped. Washing damask.

368 Verkhovzoff, Theodore, *St. Petersburg.*

Bas-relief in silver, on a gilt ground, representing the Descent from the Cross, chased by hand.

Bas-relief in silver, on a gilt ground, representing the Crucifix, Prophets, and Evangelists, chased by hand, in the old Byzantine style; intended as an upper cover for the New Testament.

369 Koshkoff, Michael, *Government of Vologda, Ustiug*—Manufacturer.

Silver articles in niello, viz.:—

Table spoons, knife and fork handles, dessert and tea spoons, snuff-boxes, sugar-tongs, tumbler.

370 Shtange & Verfel, *St. Petersburg*—Manufacturers.

Bronze candelabrum, with 12 solar lamps.

The accompanying Plate gives an illustration of this candelabrum.

371 Lapteff, Nicholas, *Government of Moscow, district of Bogordsk*—Manufacturer.

Silk for cloaks.

Silk for dresses, viz.:—Chiné. Figured and chiné checked. Shawls, chiné, crape, and gauze.

Mantles, viz.:—Velvet, wove, and figured silk.

Specimens of crape and a scarf.

All made from Russian silk.

372 Heirs of Sapognikoff, *Moscow*—Manufacturers.

Various specimens of gold brocade.

373 Moltchanoff, Evgraff, *Moscow*—Manufacturer.

Doeskin. Fancy cloth. Chintz and neckerchiefs worn by the peasants.

374 Chalovetz, —, *Moscow*—Manufacturer.

Scotch cambrics. Muslins. Velveteen for furniture.

375 Schoenfeldt, —, *St. Petersburg*—Manufacturer.

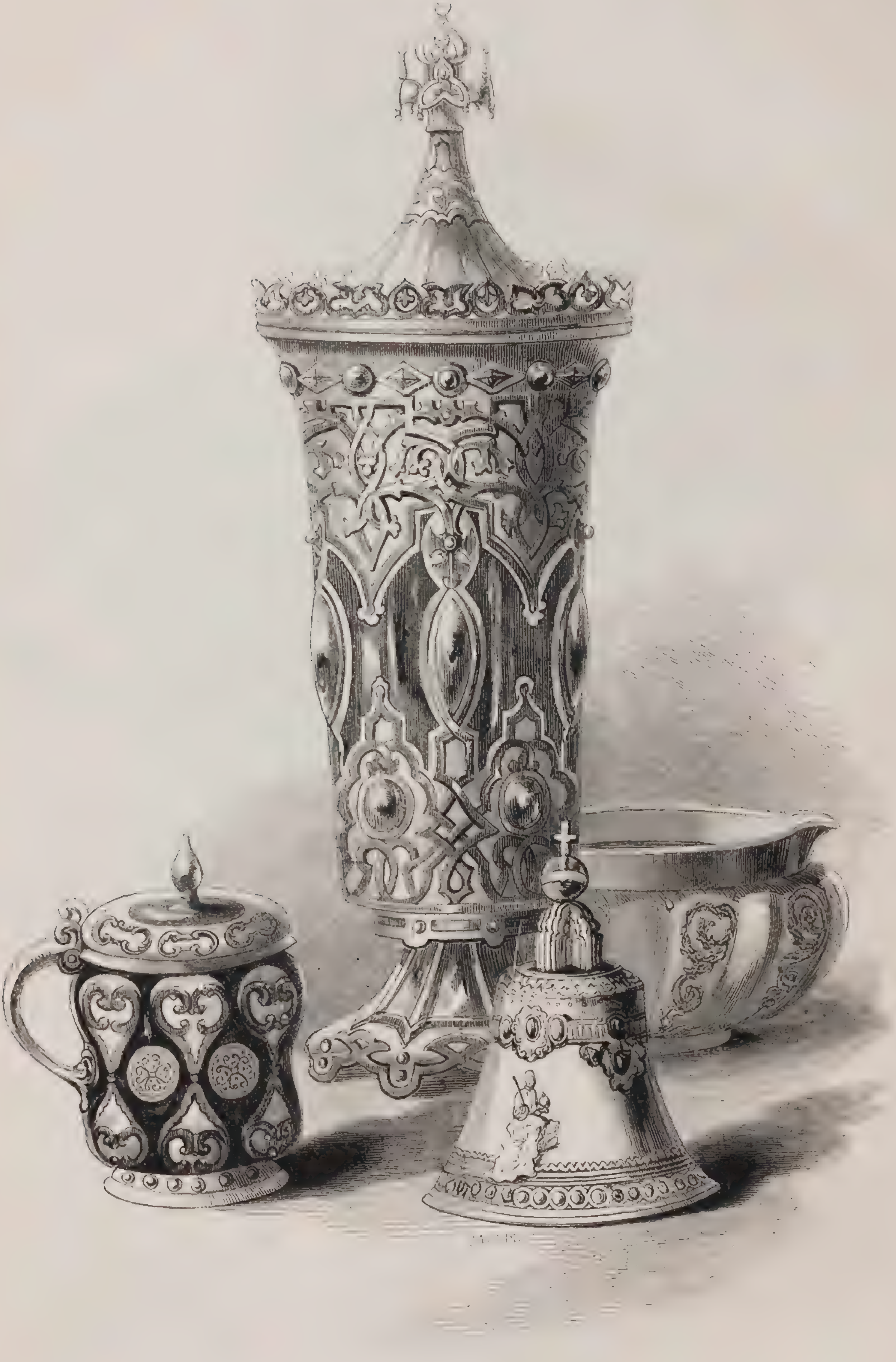
Lady's work-table.

376 Kaemmerer & Zeftigen, *St. Petersburg.*

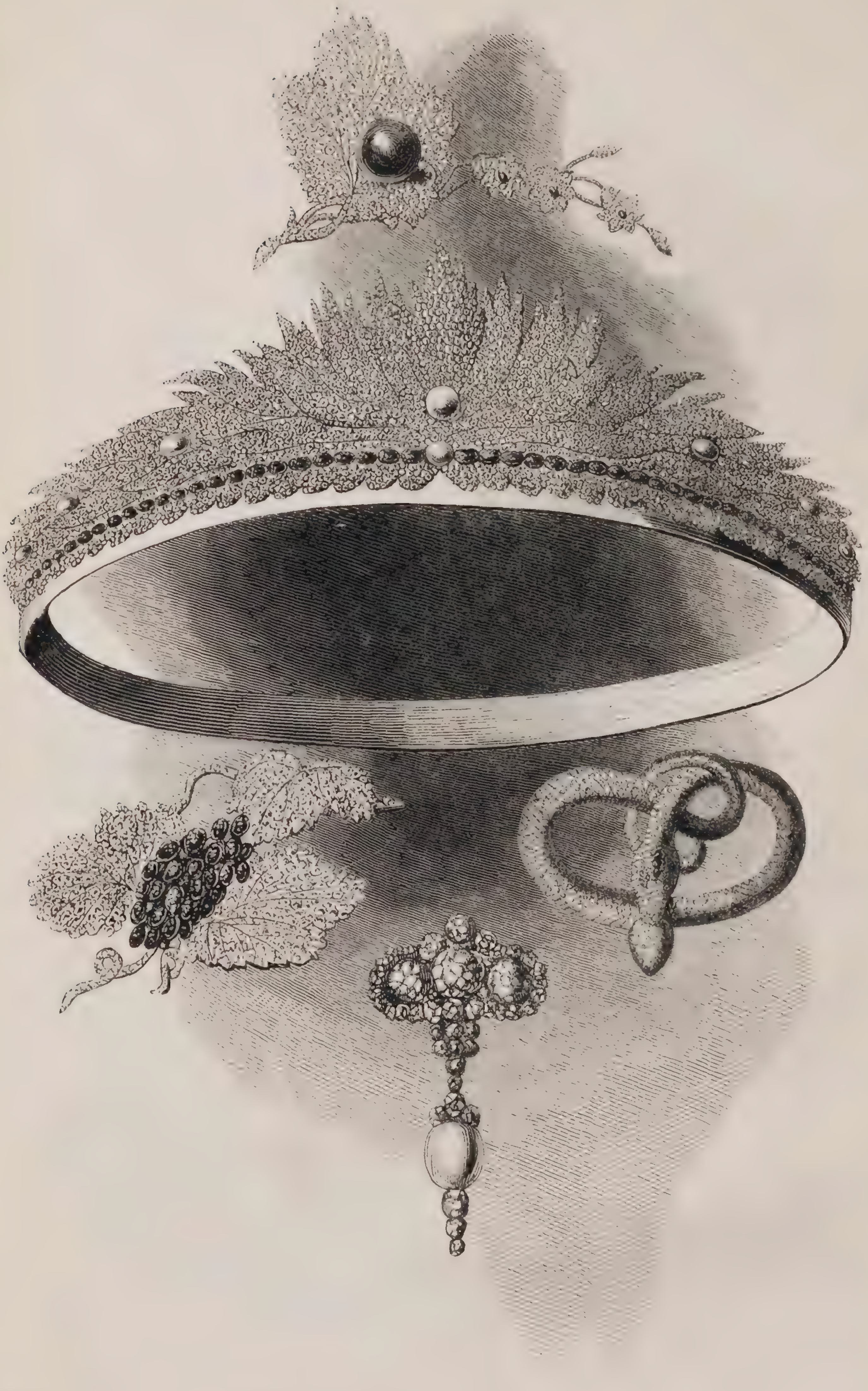
Diadem of diamonds and emeralds.

Bouquet of diamonds. Berthe of diamonds.

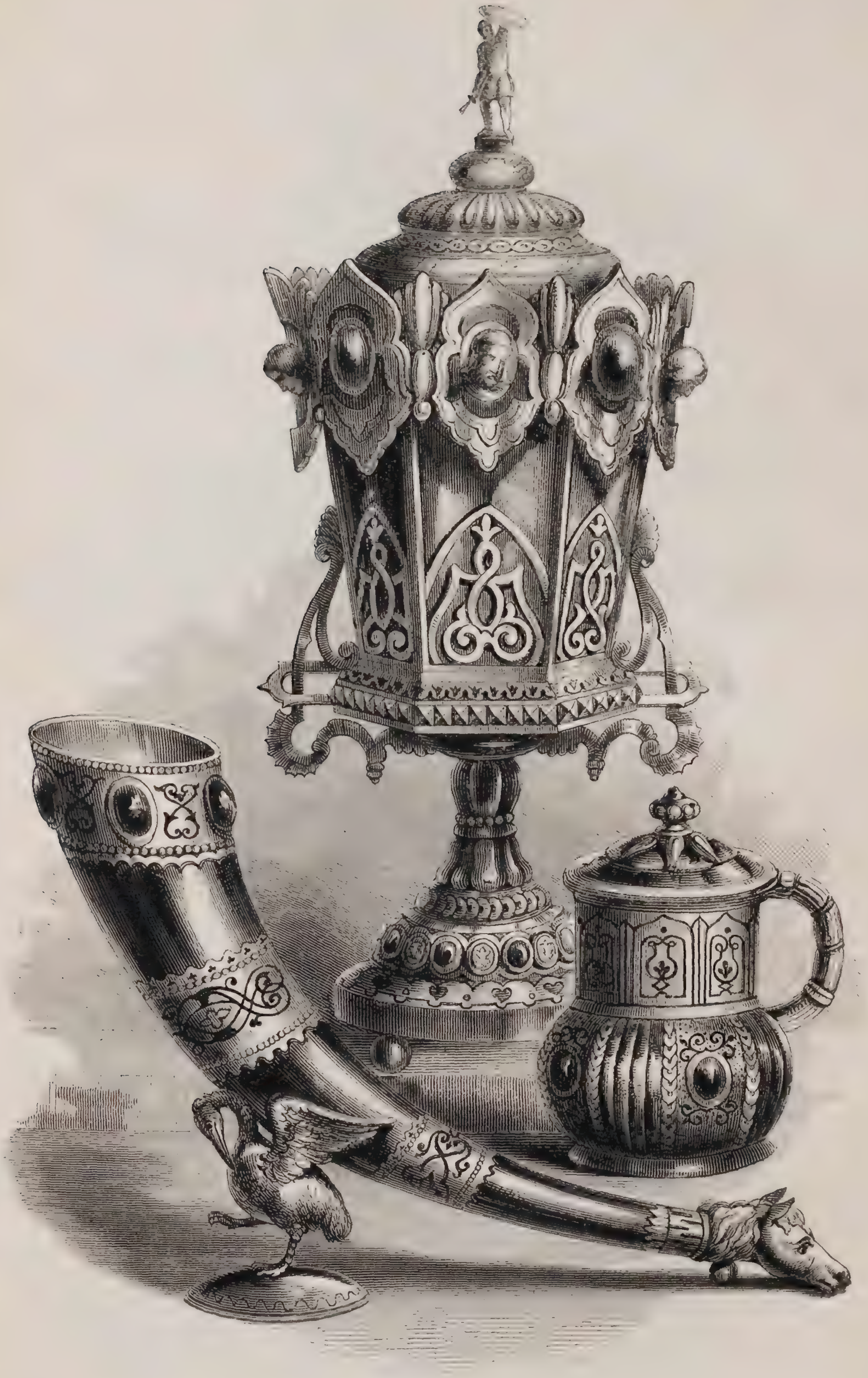
Brooch of diamonds and turquoises.



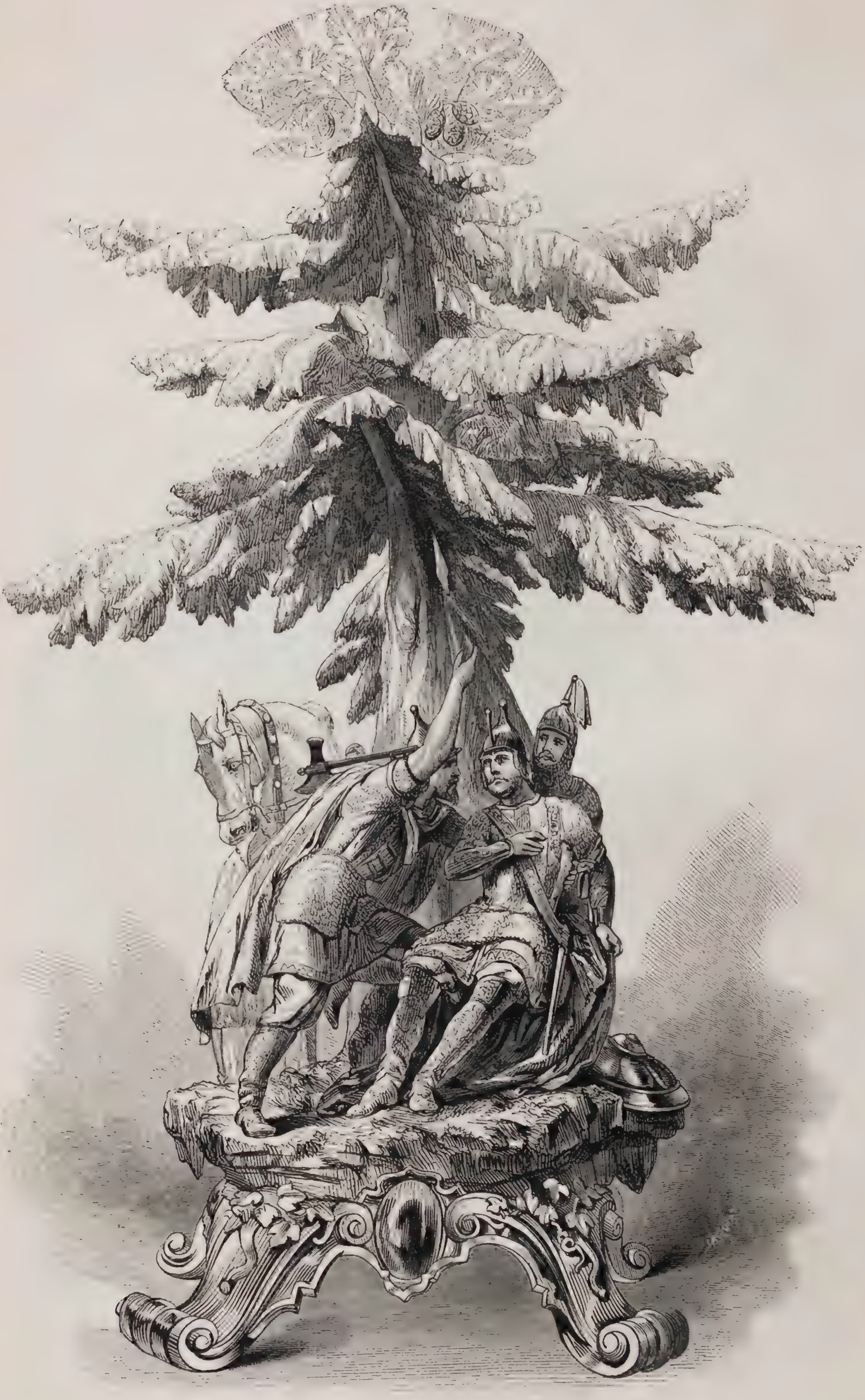
206. GOBLET, VASE, BELL, ETC., OF GOLD AND SILVER. RUSSIA.



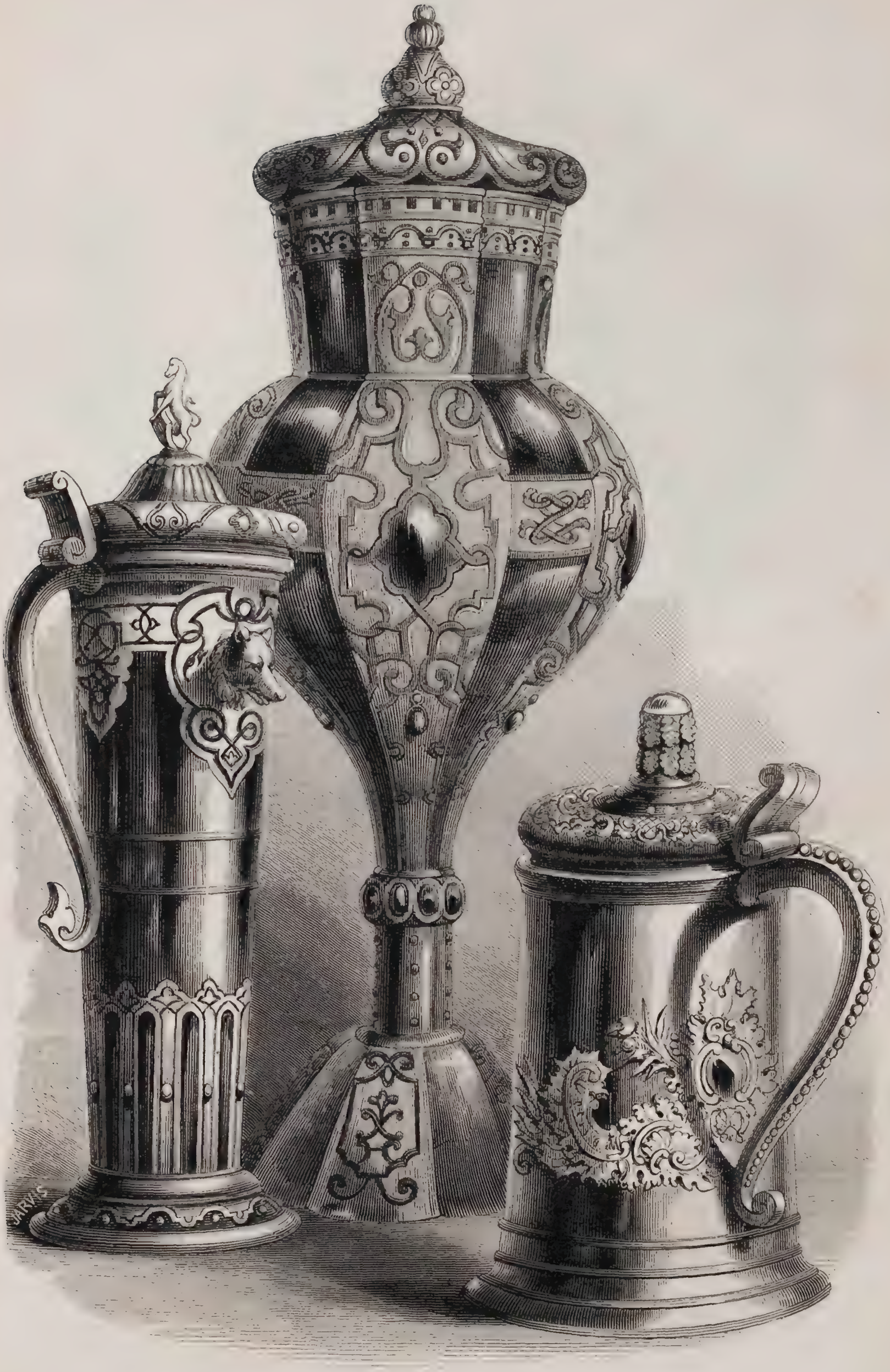
TIARA, BROOCHES, ETC., OF BRILLIANTS. RUSSIA.



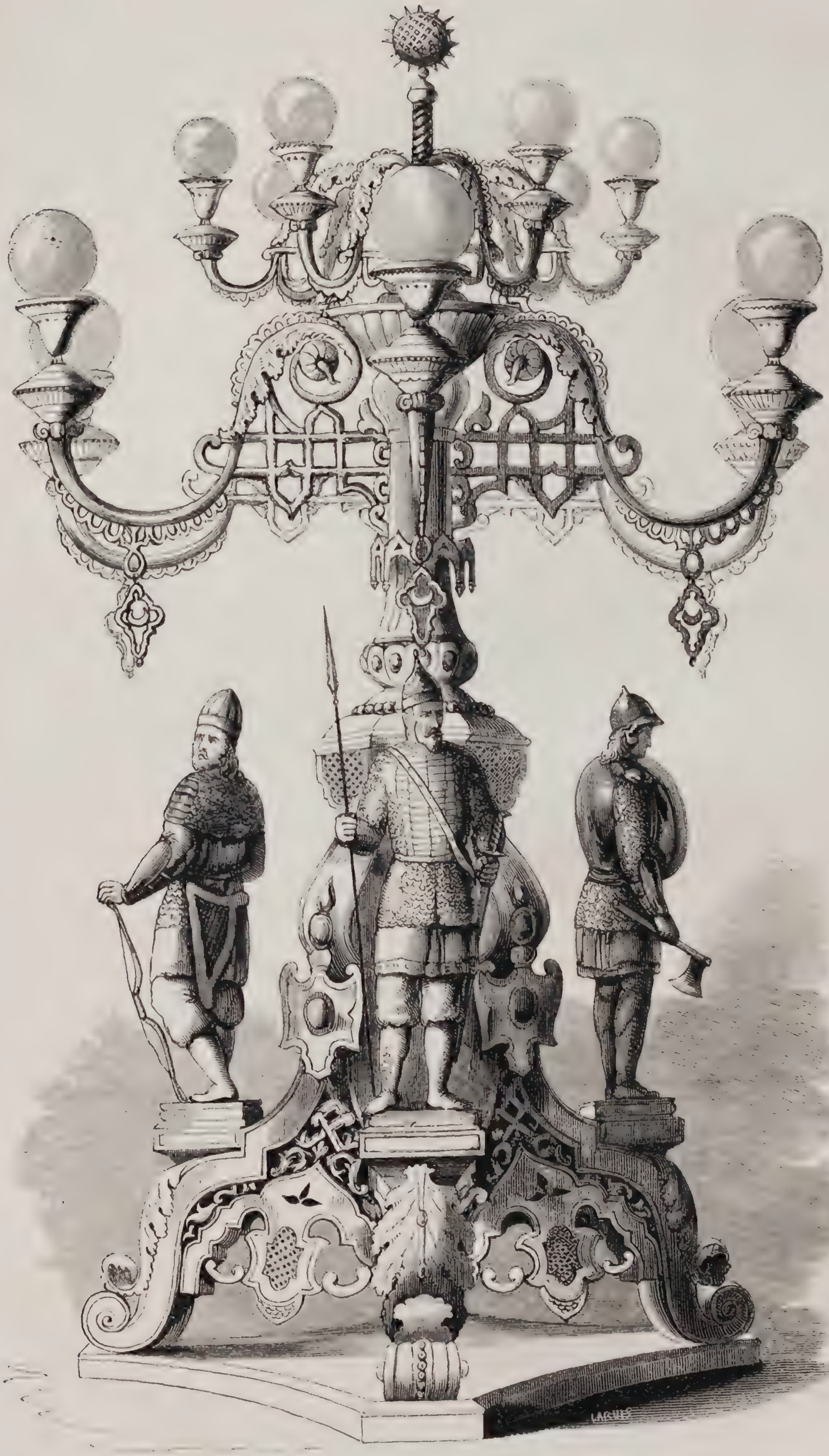
190. ARTICLES IN GOLD AND SILVER PLATE. RUSSIA.



A SILVER ORNAMENT (THE PINE TREE). RUSSIA.



197. A VASE AND FLAGONS, IN GOLD AND SILVER PLATE. RUSSIA.



199. A CANDELABRUM. RUSSIA.

TURKEY

NORTH SIDE, G. 40—42; H. 41, 42; I. J. 42.

Commissioner, EDWARD ZOHRAB, Esq. *Inspector*, Mr. C. M. MAJOR, *at the Turkish Collection in the Building.*

A COMPLETE knowledge of the commercial productions of the different countries contributing to the Exhibition, is essential to the full development of the views contemplated in the design, of giving to such countries the benefits of a mutual interchange of the latest results of improvements in the manufactures, and an insight of the processes and materials used in such manufactures. Turkey has for some years been considered as a non-industrial country, and as depending on foreign states, chiefly England, for the supplies of her annual large consumption of textile and other useful fabrics; but although naturally an agricultural country, the present Sultan is endeavouring to revive the manufactures which once existed, and by the introduction of new working establishments on a large scale, and at his own private cost, for the manufacture of broadcloth, silk, cotton, glass, and metal goods, is giving a fresh impetus to the industry of the country. Turkey, with the immense resources of the raw materials within her own territories, may, consequently, ere long, rely on the result of her home manufactures for much of her now required foreign supplies. Nothing so much conduces to the progress and prosperity of a country as the certain knowledge of the condition, prospects, and influences of the commercial policy of other countries with which that country may be in relation. Turkey has provided one of the surest means for this end, by sending into England, France, and Germany, many young men, who partly finish their education in these respective countries, and who thus become fitted to acquire a knowledge of the views of men of sound practical opinions on subjects of importance in manufacturing, political, and social matters. The knowledge thus obtained is of great value to these young men, not less so than that of the arts of ship-building, civil engineering, &c., which are in fact the more ostensible objects of their visiting foreign countries.

Amongst the contributions received from Constantinople will be found specimens of broad-cloth equal to some of our west of England manufacture, but this has been produced at a cost which precludes all ideas of competition with other countries on the important feature of cheap production. The same observation will apply to their cotton fabrics, and silk piece goods, in imitation of French stuffs, all of which can be manufactured in abundance, but at too great an expense at present to meet the means of the people at large. The improvement, however, in the article of raw silks may be mentioned especially, to prove that where encouragement is given to the energies of the people, in the way of remuneration for their skill, the result is manifest. Not fifteen years since, the silk imported into England was of low quality, badly reeled, hastily and dishonestly packed, and averaged in value about 9*s*. per lb., whilst within the last three years a new feature in the trade has been introduced, by the adoption of the improved French and Italian method of reeling, by several of the most influential firms; and the merits of the Broosa raw silk are now found to be equal to any silks brought to this market, and the consignments realize for fine ordinary qualities 14*s*. to 16*s*. 6*d*. per lb., whilst some of the finest have been sold within the last few months as high as 27*s*. per lb.

Should the manufacturers still be encouraged by a liberal policy on the part of the Turkish government, there is every reason to hope that Turkey may become a self-supplying country to a large extent in respect of the useful manufactures required also. In embroidery and articles of gorgeous work, common in Oriental states, Turkey has long stood pre-eminent; but the period has arrived when a display of more magnificence, although characteristic, is no longer accounted the test of a wealthy power. With regard to the facilities of communication with other countries for commercial purposes, Turkey stands in the position of one of the most favoured of nations, and her vast population spread over islands and on a continent margined with ports of safe and easy access to trading vessels, gives her the advantage of the ready supply of her own people with every required necessary from foreign powers, and admits of the greatest facility of exchanging her own natural productions so much required by others. The value of these will be appreciated on inspecting the list of articles enumerated in the present Catalogue, and which have been classed with as much care in the nomenclature, uses, and localities of production, as the limited time for the preparation of the work would admit.

List of Raw Materials, the produce of the Ottoman Empire, sent for Exhibition by the Central Committee of Constantinople, on the part of the Ministry of Commerce (and by order of the Sublime Porte), and the parties specially mentioned as exhibitors.

This collection of upwards of 3300 objects is arranged under the several divisions of the Vegetable, Animal, and Mineral Kingdoms, and into two general classes of Raw Materials and Manufactures. The numbers are not serial, but continuous, and each article is separately labelled.

Raw Materials.

Woods (Dyeing and other).—Forty-nine varieties of woods, shrubs, and plants, herbs, roots, fruits, oil-yielding kernels, grains, and balsams—entering into the commerce of the Levant, &c.; or employed medicinally, as dyes, &c.; or for household and agricultural purposes, numerically arranged, from the Sendgiak of Jerusalem, Djibbe, Koniah, Egypt, Saide, and other divisions of Turkey (No. 65—170). Two specimens of gutta percha; seven specimens of yellow wax; one of sugar-cane; specimen of saponiaca Egyptiaca, or "soda" (170—178 and 2015—2063).

Cotton Wool.—Gosspium, or cotton wool (2064—2088). Twenty-five varieties of cotton wool, including No. 2082, a specimen of "Lana cardic," or "ocephala," contributed from Koniah, Cassabar, and several other districts of the empire in Asia and Africa.

Tobacco.—Thirty-two specimens, from about twenty-five provinces (2089—2119).

Sponges of six kinds (2126—2131).

Wheats.—Twenty-eight samples, from Salonica, Damascus, Koniah, Adrianople, Tripoli, &c. (2132—2159).

Pounded Wheat for making Pilauf.—Five samples (2160—2169).

Barley.—Fifteen samples (2165—2169).

Oats.—Four samples (2180—2183).

Indian Corn or Maize.—Fifteen samples (2184—2198).

Rice.—Nine samples (2199—2207).

Millet.

Pinicum-Jani.—Seven varieties (2208—2215).

Sesamum.—Eleven samples of the seed (2216—2226).

Sample of Uskeep tobacco (2227).

Flax.—Eight specimens (2228—2243).

Flax and Hemp.—Eight samples (2228—2243).

Raw Material, principally of the Vegetable Kingdom.

Dyes.—Kinna weed, for dyeing the fingers, toes, and beard. Vallonia acorns; shumac; madder-root; berries—yellow, white; galls—white, yellow, black, and green; leaves of the "Enbuch" flower; saffron flowers.

Balsams, Resins, and Drugs.—Absynth, resinous scammony; vegetable, pitch, and pure resin; white bird-lime (2599—2606); white resin; balsam of Mecca; Siam turpentine; storax, or scented sennaar leaves; chamomile flowers; aloes-wood; cardamum; colocynth; hellebore; julep. A resin from Anatolia, used for making knife and fork handles (2634). Myrrh; frankincense; calamite; prepared scammony; sassafras; opium (nine varieties); leaves of the Laurus nobilis; poppy-heads; poppy seeds and leaves; rose-leaves of the R. Damascenensis and R. Centifol; and other kinds.

Roots.—Gentian; valerian; liquorice; peppermint; angelica; saffron; varieties of lilliacum; wild thyme; asphodel (or King's spear), the prepared sort.

Other Grains.—Spring wheats; autumn wheats; maize; millet; sesame. Vetches.

Products, Medical and Alimentary.

Gums.—G. Arabicum, tragacantha, karamanicum, cirasorum, masticum, ladaneum (2607—2624).

Pepper.—Capsicums; long pepper.

Edible marsh-mallows; grey peas (Astragal foliac.); berries of the Mocha coffee-plant; nasturtium; varieties of the cucumber; pumpkin; gourd; sweet potato; asparagus; spinach; turnip; cabbage (many varieties of "brassica.")

Seeds of coriander; mustard; annis; hemp; cummin.

Cotton, hemp, flax, errilac; bamea; the castor-oil bean; "faba," larger and smaller; phesiole, nine specimens (2254—2262); fibres of the wild hemp.

Flowers and heads of the poppy; specimens of the heliotrope.

Specimens of dried plants from Mount Hebron and its vicinity.

[This small collection contains several species whose organization and form are very analogous to those produced in the Alpine regions of Europe. A small box, cut out of the wood of a soft tree growing in the immediate vicinity of Jerusalem, strikingly resembles in its form, and in the subject and execution of its carvings, the little wooden caskets made by the shepherds in the mountainous districts of Switzerland and Savoy, and sold at Martigni, Brig, &c. This box encloses a good specimen of the silky filaments of the Sodom apple.]

Fruits from all the dominions of Turkey. The "mahalet," and other varieties of the plum kind, as Prunus persicus, P. Damascen, &c. Pears of many different varieties. Twelve varieties of the almond—sweet, bitter, and soft-shelled (2648—2659); tamarinds, cherries, mulberries, Egyptian jujube, orange, lime, lemon, &c.

Sugar-canes. Grasses.

Nuts.—Common hazel, pistachio, cob, chesnut, walnut, &c.

Forest and Timber Trees.—Fifty or sixty varieties of the woods of the oak, ash, maple, hornbeam, willow, beech, plane, oriental lime, sycamore, &c. (2947—2985).

Plants.—Tobaccos, especially of the kinds called "nicotiana," "hosch," "Virginia."

Hemp-Flax of very numerous varieties.

Vines of twenty-two sorts, chiefly from Damascus, Smyrna, and Koniah.

Vegetables and Animal Products (Manufactured).

Sugars.—Raw and manufactured, or white; also sugar scented.

Oil of Olives.—Many varieties (2757—2765).

Other Oils.—Essential oils of cedar, sandars, and numerous other kinds, including oils of roses, almonds, laurel (expressed), terebinthus, compound of sesame oil, and water.

[This powerful extract from the odoriferous plant so widely diffused through every country of Europe, but growing nowhere, perhaps, in more luxuriant perfection than in Turkey, is that which the dealers in the bazars of the East employ, to a greater extent than is generally known, of the genuine "attar" of roses.]

Sweet Oil of Geranium.—Rose, honey, violet, jessamine, distilled water, laurel, violet, carmine, mertha, orange.

Syrups and Sweets.—Laurel, violets, almonds, inspissated juice of grapes.

Fermented Liquors.—Beer. Numerous white wines and red wines, the produce of Turkish Moldavia and other vineyards of the empire. Rosoglio and other liqueurs.

Wax.—White, yellow, bleached, unbleached.

Snuff.—Six specimens of Turkey snuff (3120—3128).

3324 Red wine of Catnar, vineyard of Madame Dimaki (fifteen bottles).—Moldavia.

3325 White wine of Odabechti, vineyard of Prince Michel Stourdza (ten bottles).—Moldavia.

[Although Turkey has hitherto been little known in European markets as a wine-producing country, she has contributed among these white wines some that are very well made, of good body, and a brisk and very agreeable flavour. The best of these kinds have heen produced from a Rhenish grape on Mount Olympus.]

3326 White wine of Odabechti; and 3327 Red wine of Odabechti, of the vineyard of M. Pamphily (fifteen bottles each).—Moldavia.

3328 Red wine of Nebuna (six bottles); 3329 White wine of Odabechti (fourteen bottles), vineyard of Prince Michel Stourdza.—Moldavia.

3330 White wine of Catnar, vineyard of Rosmann (nine bottles).—Moldavia.

3331 White wine of Catnar, vineyard of Madame Dimaki (eight bottles).—Moldavia.

3332 Red wine of Catnar (twelve bottles); 3333 White wine of Catnar (ten bottles), vineyard of M. Cantacouzine.—Moldavia.

3334 White wine of Odabechti; 3335 Red wine of Greis; 3336 Red wine of Odabechti (ten bottles each), vineyard of Prince Michel Stourdza.—Moldavia.

3337 White wine of Ochio.—Moldavia.

3338 Prepared wine, called Wormwood wine, of Ochio (seven bottles).—Moldavia.

3339 Wine, called Prahir of Nebuna (six bottles); 3340 Red wine of Nebuna (four bottles), vineyard of Prince Stourdza.—Moldavia.

Sent by the Imperial Arsenal.

Specimens of walnut wood, oak, elm, pine, &c.

1868 White wine of Falkerson & Co. (100 bottles).—Mount Olympus.

Animal Kingdom.

23 Leopard's skin, from the neighbourhood of Djibbal, district of Saida.

26 Raw white silk (one skein), spun by Haggi Bekir.—Beirout.

27 Raw white silk (one skein), spun by Penre Hatour.—Saida.

33 Raw yellow silk (one skein), spun by Haggi Bekir.—Beirout.

43 Stuffed fish.—Coast of Syria.

60 Raw white silk (two skeins), spun at the filanda of Shemlan, Mount Lebanon, belonging to Mr. Scott.—Mount Lebanon, province of Saida.

63 Cocoons, silk worm.—Mount Lebanon, district of Saida.

142 Cocoons, silk worm, white.—Beirout.

175, 176 Raw yellow silk (four skeins). — Antioch, Aleppo.

191 Raw silk and silk-worm cocoons, viz. twenty skeins of silk; ten species of cocoons; five phials silk-worm seed, from the filanda of Mourgue & Co., Ain Hamade.—Beirout.

420 Raw yellow silk, spun at the filanda of Smyrna (one skein).—Smyrna.

421 Raw silk, white and yellow (fourteen skeins), spun at the filanda of P. Rogetti.—Salonica.

422 Raw white silk, spun at the filanda of Adrianople (one skein).—Adrianople.

423 Raw white silk, spun by the peasantry of Guive, Ismid (ten skeins).—Ismid.

424—426 Boiled silk, spun by the peasantry of Adrianople (five skeins).—Adrianople.

427 Raw silk, spun by the peasantry of Candia, A and B (two skeins).—Candia.

428 Raw silk, spun by the peasantry, A, B, and C (three skins).—Amassiah.

429 Raw silk, spun by the peasantry of Berkofscha.—Nisch.

430 Raw silk, spun by the peasantry of Zcharschamba (two skeins).—Djanik.

431 Raw silk, spun by the peasantry of Drama (one skein).—Drama.

432 Raw silk, spun by the peasantry of Smyrna (one bundle).—Smyrna.

433 Raw silk, spun by the peasantry of Belan.—Adrianople.

Raw silk: 761 12 deniers, 5 cocoons (two skeins); 762 11 deniers, 4 cocoons (two skeins); 763 16 deniers 6 cocoons (two skeins); 764 8 deniers, 3 cocoons, spun at the filanda of Noubi Mehemet Pacha.—Broosa.

Raw silk: 765 Spun at 4 cocoons (four skeins); 766 7 cocoons (four skeins); 767 5 cocoons (four skeins); 768 6 cocoons (three skeins).—Broossa.

769 Raw silk, spun by the peasantry (two skeins).—Broosa.

770 Silk-worm cocoons.—Broossa.

771 Silk-worm eggs.—Broossa.

772 Ostrich wings (two).—Esnar Medgidie, Tripoli, Barbary.

999 Bear's skin.—Marash, Adana.

1000 Deer's skin.—Adana.

1001 Lynx skin.—Merash.

1002—1004 Tiger skins.—Damascus.

Fox skins: 1005 Aidin; 1006 Yanina; 1007 Baffra Djanik; 1008 Trebizond; 1002 Nisch; 1010 Koniah; 1011 Magnesia; 1012 Adana; 1013 Kaissarieh; 1014 Koniah.

Jackal skins:—1015 Aidin: 1016 Baffra, Djanik; 1017 Cause, Djanik; 1018 Adana; 1019 Magnesia; 1020 Gumuldgik; 1021; Ordon, Trebizond; 1022 Amassiah.

Wolf skins:—1023 Adana; 1024 Merash, Adana; 1025 Amassiah; 1026, 1027 Koniah; 1028 Adana; 1029 Oktche Alyd.

1030 Lynx skin.—Adana.

Wild-cat skins:—1031 Baffra, Djanik; 1032 Adana; 1033 Amassiah; 1034 Nish; 1035 Koniah.

1036, 1037 Hare skins.—Ianina.

1038 Badger.—Acktche-Abad, Trebisond.

1039 Otter skin.—Adana.

1040 Beaver's skin.—Ismid.

Martin or weasel skins:—1041 Merash, Adana; 1042 Magnesia; 1043 Ianina; 1044 Aidin; 1045 Magnesia; 1046 Djanik; 1047 Nish; 1048 Cara Gash; 1049 Nish.

1050, 1051 Lion skins.—Tripoli, Barbary.

Goat skins: 1052, 1053 dyed (used as rugs); 1054 white; 1055, 1056 dyed—from Angora. 1066 Koniah.

1067 Sheep skin.—Koniah.

1068 Deer skin.—Koniah.

1194 Fox skins, washed.—Tripoli, Barbary.

1195 Lamb skins, black; 1196 white.—Wallachia.

1590 Raw silk, spun at the filanda of Bilezikdjeoglou, No. 1, two skeins (four cocoons); No. 2, two skeins (three cocoons); No. 3, two skeins (five cocoons).—Broossa.

1591 Raw silk and cocoons, spun at the filanda of Mechirdetz Djezairlioglu; seventeen skeins silk (6 cocoons, 12 and 13 deniers), three boxes cocoons.—Broossa.

1592 Raw silk and cocoons, as above, filanda No. 2, seventeen skeins (6 cocoons, 12 and 13 deniers).—Broossa.

1593 Raw silk and cocoons, as above, filanda No. 1, sixteen skeins silk (3 and 4 cocoons, 12 and 13 deniers), three boxes cocoons.—Broossa.

1594 Raw silk, spun by the peasantry.—Bazarkivi, Ismid.

1595 Raw silk, spun by the peasantry of Guire (one bundle).—Ismid.

1596 Raw silk, spun by the peasantry of the district of Broossa (one bundle).—Broossa.

1597 Raw silk, spun by the peasantry of Ghemlek (one bundle).—Broossa.

1598 Raw silk, spun by the peasantry of Dimalaka (one bundle).—Biga.

1599 Raw silk, spun by the peasantry of Banduma (one bundle).—Biga.

1600 Raw silk, spun by the peasantry of Guera (one bundle).—Ismid.

1601 Raw silk, spun by the peasantry of Adrianople (one bundle).—Adrianople.

1602 Raw silk, spun by the peasantry of Damascus (one bundle).—Damascus.

1603 Raw silk from four cocoons (from the filanda of Demetrius Simmon) of Wallachia.

1604 Raw silk, spun by the peasantry of Smyrna.—District of Smyrna.

1605 Raw silk, called Payambol, spun by the peasantry—District of Smyrna.

1606 Raw silk, spun at the filanda of Torosoglou (one bundle).—Broossa.

1607 Raw silk, spun by the peasantry (one bundle).—Tripoli, Barbary.

1608 Raw silk, spun by the peasantry of Djanik (one bundle).—Djanik.

1609 Raw silk, spun by the peasantry of Temora (one bundle)—Philippopoli.

1610 Raw silk, spun by the peasantry of Broossa (one bundle).—Broossa.

1705 Raw silk, spun by Yussep Beyoglou's steam filanda; No. 1, 10 deniers; No. 2, 13 deniers; No. 3, 15 deniers.—Broossa.

1706 Raw silk, spun by the peasantry of Denurdash (six skeins).—Broossa.

1707 Raw silk, spun by the peasantry of Guere (two skeins).—Ismid.

1708 Raw silk, spun by the peasantry (two skeins).—Broossa.

1711 Raw silk, spun at the filanda of J. Paulaky, Broossa; establishment founded in 1847 on the French system of Cevennes. Cocoons, 3, 4, 6, 7, 9, 12; Skeins, 4, 4, 4, 2, 2, 4.

1823 Tobacco, Said Aga (three cases).—Turkey.

1825 to 1919 Bear, wolf, lynx, badger, and other skins, from Moldavia, Tremora, and Tricala.

1974 to 2006 Raw silk, white, spun in the filandas of Jassy and elsewhere, in Moldavia.

2006 to 2044. Various specimens of sheep's wool, goat's and camel's hair, &c.

2048 to 2831. Buffalo and other horns; and a miscellaneous collection of animal and medicinal products, including Butargo fats, tallow, &c.

Mineral Kingdom.

An extensive collection of mineral products, inclusive of natural specimens of sulphur, from Jerusalem.

Black mineral resin (bituminous liquor, naphtha).

Potter's earth.—Beirout.

White clay.—Tenesi, Saida.

Granite.—Sour, Saida.

Clay, used for making pipe bowls.

Iron ore and coal.—Mount Lebanon.

Jasper.

Mineral potash, from Wallachia.

Nitre.

Rock salt, grey and white; copperas, alum, gypsum, selenite.

Carbonate of limestone, used for clarifying petmes, or grape-juice treacle. Zoolite, quartz, garnets, opal, jasper, whetstones of various kinds. Emery, mica, china clay, steatite. A collection of metalliferous ores of iron and copper. Specimens of gold dust, galena, arsenic. Mineral fuel, as lignite, brown coal, &c.

Manufactures.

Province of Saida.

1 Silk bridle, in four pieces, weighing 240 drachmes.—Manufactured by Seid Omer, Tripoli.

2, 3 Black silk stuffs, used for Christians' turbans.—Manufactured by Tchertchy, Beirout.

4 Silk and cotton sash.—Manufactured by Omer Kibary, Tripoli.

5 Check silk sash.—Manufactured by Tchertchy, Beirout.

6 Silk and cotton stuffs, called imitation Broossa.—Manufactured by Emin, Tripoli.

7 Silk and cotton stuffs, imitation Avaneh, for turbans.—Manufactured by Yashara Hossein, Tripoli.

8 Silk taffeta, for dresses.—Manufactured by Tchertchy, Beirout.

9 Silk and cotton stuffs, called Guézy; 10, 11 Silk taffeta; 12 Silk and cotton satin, called Eminieh; 13, 14 Cotton and silk stuffs, called Tchetari.—Manufactured by Yashara Hossein, Tripoli.

15 Cotton stuffs, used for dresses.—Manufactured by Hadgi Mustapha, Mihir, Lazikiyé.

16 Man's jacket, cotton and silk, called Guézy turka; 17 Under-coat, cotton and silk.—Manufactured by Hanonna, Jerusalem.

18 Cotton twist.—Manufactured at Ashlie, Bershon.

19 Blue cotton cloth; 20 Cotton cloth, sateen.—Household Industry, Mount Lebanon.

20, 21 Cotton cloth, sateen; 22 Coloured.—Manufactured by Hadgi Mustapha, Lazikiyé.

24 Gold thread, different qualities.—Made by Nameh, Beirout.

25 Cap, silk, cotton and gold.—Made in the villages of Mount Lebanon.

28 Silk sashes (three bundles).—Manufactured by Tchertchy, Beirout.

29 Silk cord.—Manufactured by Nameh, Beirout.

30 Silk ribbons, coloured.—Manufactured by Tchertchy, Beirout.

31 Gold and silk thread sabre-cord.—Manufactured by Nameh, Beirout.

32 Silk-gauze shirts.—Manufactured by Tchertchy, Beirout.

38 Candlestick, carved in bituminous stone, found near the tomb of Moses.—Carved by Merdehiah, Jerusalem.

45 Silk sash.—Manufactured by Mihal, Tripoli.

46 Silk veil or cloak.—Manufactured by Omer Kibary, Tripoli.

47, 48. Silk sashes, silver fringes.—Manufactured by Tchertchy, Beirout.

49 Silk sashes, silk and silver thread.—Manufactured by Lohore, Beirout.

50 Silk and silver cord.—Manufactured by Nameh, Beirout.

51 Silk and gold thread caps; 52 Silk and silver thread cushion-cover; 53 Silk and silver thread cap; 54 Silk and silver thread tobacco-bag.—Household Industry, villages of Mount Lebanon.

55 Silk and silver thread braces; 56 Silk tobacco bag.—Manufactured by Omer Kibary, Tripoli.

57 Silk and gold ladies' slippers; 58 Silk and gold mantle.—Household Industry, villages of Lebanon.

66 Soap, common.—Manufactured by Tchertchi Hanan, Jerusalem.

68 Soap, scented.—Manufactured in Djibba.

108 Cup in porphyry.—Carved by Jacob Mislem, Jerusalem.

109 Cup in bituminous stone, found near the tomb of Moses, Bethlehem.—Carved by Mordehai, a Jew of Bethlehem.

110 Box, cut from the stones of Jerusalem, containing nuts of Hidgaz, near Mecca; a little silk of the *Asclepias gigantia*, or Sodom apple, and a piece of red porphyry.—Cut by a poor self-taught Jew; sent by H. B. M.'s Consul, Jerusalem.

111 Spoons in porphyry.—Cut by Jacob Mislam, Bethlehem.

112 Inkstand, in root of the olive-trees of Jerusalem.—Cut by Yani, Jerusalem.

114 Shell in mother-of-pearl.—Carved by Isan, a Jew of Bethlehem.

115 Paper-folders, in wood of the olive-trees of Jerusalem.—Hanan, of Jerusalem, maker.

118 Soap.—Made at Seid Mehemet's Soap Manufactory, Tripoli.

119 Chaplets.—Made by Abdullah, Bethlehem.

120 Box in olive wood, containing dried flowers and a sample of cotton grown in Jerusalem, by H. B. M.'s Consul.—Made by Saul, a German Jew. Flowers prepared by E. A. Finn, sent by H. B. M.'s Consul, Jerusalem.

121, 124 Silver plates.—Made by Andon, silversmith, Beirout.

125 Silver anklets for women.—Made by Sersik, silversmith, Beirout.

126 Silver soup-bowl and cover.—Made by Andon, Beirout.

127 Silver looking-glass case, with glass; 128 Silver zarfs, or coffee-cup stands.—Made by Gergeora, St. Jean d'Acre.

129 Silver cup for water, and cover; 130 Gold necklace (worn by the women of Souda), and called Arpa danleghé.—Made by Andon, Beirout.

131 Gilt silver bracelets; 132 Copper bracelets.—Made by Sersik, Beirout.

133 Gold ear-rings.—Made in Sour.

134 Silver thread watch-chain.—Made by Nameh, Beirout.

135 Silk purses.—Manufactured by Tchertchy, Beirout.

136 Silk and silver-thread garters.—Manufactured by Nameh, Beirout.

137 Silk-card; 138, 141 Tassels for caps or fez, called Puscules, in silk.—Made by Tchertchy, Beirout.

147 Snuff-box, in bituminous stone, found near the tomb of Moses; 148 Paper-holder, in same stone; 150 Zarf and coffee-cup, in the same stone.—Made by Issa Berki, Bethlehem.

159 Cross, cut in wood called Hashb-el-gharb.—Carved by Hanan, Jerusalem.

163 Mother-of-pearl snuff-box. — Carved by Yusef Djebriyé, Bethlehem.

168 Short mantle in wool.—Household Industry, villages of Jerusalem.

171 Mattress-cover.—Manufactured by Selandgeli, Saida.

172 Woman's mantle, in wool.—Made by Elias, Bethlehem.

179 Silk, cotton, and gold stuffs, called Tchitari; 184 Silk, cotton, and gold stuffs, called Telsig abani.—Manufactured by Hassi Oglou, Aleppo, province of Aleppo.

187 Cup, cut in stone from the neighbourhood of the tomb of Moses.—Cut by Issa Perki, province of Saida.

188 Rug.—Made by the Turcomans of Tripoli, province of Saida.

189 Carpet.—Manufactured by Omer, Jerusalem, province of Saida.

190 Candlestick in porphyry.—Manufactured by Yacoub, Muslamin, Bethlehem, province of Saida.

192 Crimson silk damascens, for furniture, forming a complete assortment, viz.:—Chair covers, arm-chair covers, cushion covers, sofa covers, divan cover, border for ditto. —Manufactured by Donadoglou Andon, Aleppo.

193, 194 Silk and cotton quilting.—Manufactured by Elias Ersan, Aleppo.

195 Silk and cotton stuffs, called imitation Teli-abani. Manufactured by Hassioglou Andon, Aleppo.

196 Silk and cotton stuffs for dresses, called Hind-sevaï; 197 Silk and gold stuffs for turbans; 198 Silk and gold stuffs for dresses, called Hind sevaï; 199, 201 Silk stuffs for turbans, called Teli poshru.—Manufactured by Donadoglou Andon, Aleppo.

202 Silk gauze shirting; 203 Woman's shirt in silk gauze, gilt fringes; 204 Silk gauze shirting; 205 Silk bed-sheet.—Household Industry, women of Scutari, province of Scodra.

206 Silk bed sheet, gilt fringes.—Manufacture of Ahmet Sali, Scutari, province of Scodra

207 Silk bed sheet.—Household Industry, women of Candia.

208 Silk bed sheeting.—Household Industry, women of Trebizond.

209, 213 Silk gauze shirting.—Household Industry, women of Candia.

214, 215 Linen cloth, called Riza bezy; 216 Silk gauze shirting; 217 Woman's veil, or cloak, in silk; 218 Silk sheet; 219 Linen shirting, called Riza bezy; 220 Cotton and shirting, called Halali.—Household Industry, women of Trebizond.

221 Cotton sheeting; 222 Linen towel.—Household Industry, women of Candia.

223 Linen towel.—Household Industry, women of Trebizond.

224 Cotton shirting.—Household Industry, women of Angora.

225 Embroidered towel; 226 Embroidered napkin, called Tchevré.—Household Industry, women of Candia.

227, 229 Goats' wool gloves and stockings.—Household Industry, women of Angora.

230, 231 Woollen stockings.—Household Industry, women of Sofia.

232 Cloth for the bath, called Fouta, silk and gold.—Manufactured by Shemsi-Mollah, Broossa, province of Hoodavendigina.

233 Gloves, embroidered.—Household industry, women of Angora.

234 Silk and gold bed-cover. — Manufactured by Shemsi-Mollah, Broossa, province of Hoodavendigniar.

235, 237 Goat's-wool men's stockings. — Household industry, women of Sofia.

238 Bed-sheet, embroidered in silk and gold.—Household industry, women of Candia.

239 Silk sedgade, or rug.—Manufactured by Nakish Bendoglou Kircor, Broossa.

240 Silk gauze shirt and sash, embroidered in gold.—Household industry, women of Candia.

241, 242 Silk stuff for dresses, called Abaneh; 243 Silk and cotton stuff for dresses, called Shetari; 244 Silk and cotton stuff for dresses, called Cutni; 245 Silk sash, called Abaneh.—Manufacture by Djerdisoglou Bedros, Broossa.

246 Silk and cotton cloth for the bath, imitation Salonica.—Manufactured by Ali Baba, Broossa.

247 Silk and cotton sash, imitation Abaneh.—Manufactured by Djerdisoglou Bedros, Broossa.

248 Towel, imitation Salonica. — Manufactured by Shemsi-Mallah, Broossa.

249 Bed-cover, Cutni. — Manufactured by Dervishoglou Malatia, Broossa.

250 Assortment of cloth for the bath.—Manufactured by Eskishehrlioglou Ovanes, Broossa.

251 Assortment of cloths, called Taragli.—Manufactured by Gulmezoglou Marat, Broossa.

252, 255 Stuff in goat's wool, called Sof and Shali.—Manufactured in large quantities at Angora.

256 Crimson silk sash.—Household industry, women of Candia.

257 Silk cravats.—Manufactured by Djerdisoglou, Broossa, province of Hoodavendigniar.

258 Silk gauze mosquito curtain. — Manufacture of Djerdisoglou Bedros.

259 Silk shirting.—Manufactured by Ovanes, Broossa.

260 Silk bed-cover.—Manufacture of Shemsi-Mollah, Broossa.

261 Silk and cotton Cutni cushion-covers; 262 White cotton and silk stuff for trousers; 263 White striped taffeta.—Manufactured by Djerdisoglou Malatia.

264 Silk and gold stuff, called Silemieh.—Manufacture of Papazoglou, Broossa.

265 Silk and cotton stuff, called imitation Abaneh; 266 Silk and cotton stuff, called Aladgia.—Manufactured by Djerdisoglou, Broossa.

267 Napkin for the bath.—Manufactured by Shemsi-Mollah, Broossa.

268 Silk sash, imitation Tripoli. — Manufacture of Djerdisoglou, Broossa.

269 Stuff in Angora goat's wool, called Shali.—Manufactured in large quantities at Angora.

270 Silk and cotton towel.—Manufactured by Baba, of Salonica.

271 Silk braces. — Manufactured by Yaondi Abram, Broossa.

272, 273 Belts in silk, cotton, and wool.—Manufactured by Ibrahim Aga, Broossa.

274 Camels'-hair rug, embroidered.—Manufactured by Eskishehrlioglou, Broossa.

275 Silk stuff for sofa covers. — Manufactured by Djerdisoglou Malatia, Broossa.

276 Sofa-cover; Cushion-covers; 277 Rug in felt.—Manufactured by Omer Aga, Broossa.

278 Taffeta, called imitation Paris.—Manufactured by Djerdisoglou, Broossa.

279 Silk and cotton towel, imitation Solonica.—Manufactured by Ali Aga, Broossa.

280 Silk stuff, embroidered in gold, called Katna-Rear. —Manufactured by Papazoglou Agassi, Broossa.

281 Silk bridle.—Manufacture of Yahondi Avram, Broossa.

282, 283 Silk taffeta, called Tehitari.—Manufactured by Djerdisoglou Bedros, Broossa.

284 Silk and gold stuff, called Sevaï.—Manufactured by Manassoglou Arsan, Broossa.

215 Goats'-wool stockings.—Household industry, Seid Gaza, Broossa.

287, 288 Felt caps.—Manufactured by Ali Bey and Osman Bey, Broossa.

289, 290 Felt jackets. — Manufactured by Ali Bey, Broossa.

291 Cotton bag.—Household industry, Candia.

292 Woollen cloth, for turbans. — Manufactured by Stefanoglou Dimitri, Salonica.

293 Silk and cotton cloth for dresses; 294 Towel, called Baba kiari.—Household industry of Salonica.

297 Stuff in goat's wool, called Sof.—Manufacture of Angora.

298 Goat's-wool gloves; 299 Stuff in cotton, called Aladgia.—Household industry, Salonica.

300 Goat's-wool stockings. — Household industry, Angora.

301 Ladies' coat, cloth, embroidered in gold.—Made by the tailors of Scutari, province of Scodra.

302, 304 Silk gauze shirting and sheeting.—Household industry, Adrianople.

305 Silk gauze shirting and sheeting.—Manufactured by Demitrioglou, Salonica.

306 White woollen stuff, imitation Merino; 307 Woollen sash, imitation Tripoli.—Manufactured at Tchandera, province of Bozak.

308 Shirting, called Halali bez.—Household industry of Sofia.

309 Cotton cloth for turbans, called Abané.—Manufactured by Mehemetoglou, Trebizond.

310 Linen sash, imitation Tripoli.—Manufactured by Ismaeloglou Mehemed, Trebizond.

311, 316 Sofa-covers and cushions, called Beledy.—Manufactured by Ali and Mehemed, Aïdin.

317 Cotton and linen cushion-cover. — Household industry of Candia.

318, 320 Flowered muslin for turbans, called Abani. Manufactured by Bekiroglou, Trebizond.

321, 323 Towels for the bath, cotton.—Manufactured by Costantino Yanaki, Salonica.

324, 327 Towels for the bath, mixed with silk Baba kiari.—Manufactured largely at Salonica.

328 Cushion-covers, cotton. — Manufactured by Guverdyinoglou, Salonica.

329 Cotton bags.—Household industry, Candia.

330, 331 Cotton cloths for the bath. — Household industry of Cara-Hissar.

332, 333 Bags and wool and cotton. — Household industry of Candia.

334 Felt sedgadé, or rug, embroidered in gold.—Manufactured by Ohanesoglou, Broosa.

335 Cotton shirt for the bath, embroidered in gold and silk.—Manufactured by Costanti Yanaki, Salonica.

336, 337 Silk ribbon; 338, 339 Silk cord. — Household industry, Scodra.

340, 342 Silk cord and thread.—Household industry of Adrianople.

343 Silk sabre-cord; 344 Silk braid.—Manufactured by Mahmoud, Adana.

345, 347 Buttons in gold and silk thread.—Household industry, Scodra.

348 Silk sashes and purse.—Manufactured at Tripoli, Barbary.

349, 353 Silk thread and braid; 354, 368 Silk and gold cord and braid; 369, 370 Silk and gold buttons; 371, 372 Silk cord and braid; 373 Silk buttons.—Manufactured by Emin Effendi, Trebizond.

374 Embroidered napkins, or Tcheurés.—Household industry, Nish, province of Servia.

379, 379 Silk and gold stuff for furniture.—Manufactured by Halil Kenleoglou, Bulledgik, province of Hoodavendiginar.

380 Napkin for the bath, called Fouteh, silk and gold. —Manufactured by Hadgi Mustafa, Tripoli, Barbary.

381 Ihram, or cover, in silk and gold.—Manufactured at Tripoli, Barbary.

382, 383 Ihram, or cover, in silk and gold.—Manufactured by Mahomed, Tripoli, Barbary.

384 Silk stuff for ladies' dresses.—Manufactured by Hadgi Suliman, Tripoli, Barbary.

385 Silk stuff for ladies' dresses.—Manufactured at Tripoli, Barbary.

386 Silk stuff for ladies' dresses.—Manufactured by Hadgi Mahomet, Tripoli, Barbary.

387 Silk gauze ihram, or cover; 388 Silk stuff for dresses. — Manufactured by Hadgi Mahomed, Tripoli, Barbary.

389 Woollen ihram for women. — Manufactured by the tailors of Tripoli, Barbary.

390 Silk and cotton ihram.—Manufactured by Hadgi Mehemet, Tripoli, Barbary.

391 Arab shirt in cotton.—Manufactured at Tripoli, made by Mose Ganifono.

392 Arab saddle-cloth, wool; 393 Red woollen ihram; 394 Arab shirts.—Made by the tailors of Tripoli, Barbary.

395 Furniture stuff, embroidered in silk and gold; 396 Sedgadé, or rug, embroidered in silk and gold.—Embroidered by Isaac Aga, Salonica.

397 Cotton, silk, and gold ihram, for women.—Manufactured by Hadgi Mahomet, Tripoli, Barbary.

398 Cloth, embroidered in gold; 399 Tehevré, or napkin, embroidered in gold; 400 Sash, embroidered in gold; 401 Covering for the head. — Embroidery by Balzicoglou's Daughter, Smyrna.

402, 403 Ladies' caps, or fez, tassels and gear in gold thread.—Embroidered by Hodgia Moses, Smyrna.

404 Velvet tobacco bag, embroidered.—Embroidery by Agobi's Daughter, Smyrna.

405 Velvet tobacco bag, embroidered with beads. —Embroidery by Yallapanoglou's Daughter, Smyrna.

406 Velvet tobacco bag, embroidered in silk.—Embroidery by Simonoglou's Daughter, Smyrna.

407 Purse, embroidered with beads.—Embroidery by Karasashoglou's Daughter, Smyrna.

408 Albanian costume for men, complete, embroidered in gold.—Made and embroidered by the tailors, or Feruveladgi, of Janina.

409 Albanian costume for ladies, embroidered in silk and gold; 410, 411 Albanian ladies' costume, complete, in cloth and silk, embroidered in silk and gold.—Made and embroidered by the tailors and women of Janina.

412 Albanian man's costume, in cloth, embroidered in gold; 413 Albanian man's costume, embroidered in silk. —Made and embroidered by the tailors of Janina.

414, 415 Woollen stockings. — Household industry, women of Janina.

416 Cotton and silk Ihram.—Manufactured by Hadgi Mahomed, Tripoli, Barbary.

417 Silk and cotton cloth, called Harari; 418 Silk, cotton, and gold cloth for the bath, called Abdest fouta. —Manufactured by Hussein, Smyrna.

419 Silk and cotton ihram.—Manufactured by Ahmet Tchaoush, Smyrna.

434, 436 Morocco skins, red, yellow, and black. —Manufactured by the tanners of Janina.

437 Morocco skins, red.—Manufactured at Scala-Nova, province of Aïdin.

439, 440 Morocco skins, black; 441, 445 Tanned and dyed sheep's skins.—Manufactured by the tanners of Smyrna and neighbourhood.

446 Morocco skins, black.—Manufactured by the tanners of Aïdin.

447 Morocco skins, red; 448 Tanned sheep's skins, dyed; 449 Morocco skins, black.—Manufactured by the tanners of Denizlou, province of Aïdin.

450, 451 Morocco skins, red and yellow.—Manufactured by the tanners of Aïdin.

452 Morocco skins, red.—Manufactured by Gulmezoglou Hadgi Mehemet, Koula.

453 Morocco skins, red.—Manufactured by Gulmezoglou Hadgi Mehemet, province of Hoodavendigniar.

453a Morocco skins, red.—Manufactured by Ahibaba Zade, Oushak, province of Hoodavendiginar.

454, 459 Morocco skins, red, yellow, and black; 460 Tanned sheep's skin.—Manufactured by the tanners of Adana.

461, 462 Morocco skins, red and black.—Manufactured by the tanners of Angora.

463, 465 Morocco skins, white, black, and red.—Manufactured by the tanners of Philipopoli.

466, 470 Morocco skins, red, black, and yellow.—Manufactured by the tanners of Trebizond.

471, 473 Morocco skins, grey.—Manufactured by the tanners of Nish.

474, 475 Morocco skins, grey and red.—Manufactured by the tanners of Kaissarieh.

476, 477 Morocco skins, grey and red.—Manufactured by the tanners of Adrianople.

478 Tanned sheep's skins; 479, 482 Morocco skins, red; 483 Tanned sheep's skins, red; 484, 486 Morocco skins, black and yellow.—Manufactured by the tanners of Tripoli, Barbary.

487, 490 Morocco skins, black, grey, white, and red.—Manufactured by the tanners of Candia.

491, 492 Morocco skins, red.—Manufactured by the tanners of Guzel-Hissar, Aïdin.

493 Tanned skins.—Manufactured by the tanners of Tripoli, Barbary.

494 Morocco skins, grey.—Manufactured by the tanners of Janina.

495 Tanned skin.—Manufactured by the tanners of Cassamonni.

496, 497 Morocco skins, white.—Manufactured by the tanners of Sophia.

498 Tanned camel's skin.—Manufactured by the tanners of Guzel-Hissar.

499, 500 Woollen carpets.—Household industry, Candia.

501 Woollen carpets.—Household industry, Sharkeny, province of Nish.

502 Woollen carpets.—Household industry, Keukdgik, district of Bozak.

503 Woollen carpets.—Household industry, Djeridi-Ashiret, Adana.

504 Woollen carpets.—Manufactured by the Turcoman Mehemet, Aleppo.

505 Rug.—Household industry, women of Sharkeny, Nish.

506 Carpet.—Manufactured by Gabriel Yarkade, Salonica.

507 Carpet.—Household industry, women of Nish.

508 Carpet.—Household industry, Mesraha, Tripoli, Barbary.

509 Carpet.—Manufactured by Gabriel Yarkadi, Salonica.

510 Woollen stuff used for cloaks, called Guvez aba.—Manufactured by Kekimoflou Artin, Merhash, Adana.

511 Carpet.—Manufactured by Hassan, Merhash, province of Adana.

512 Carpet.—Household industry, Eski-eldé, Koniah.

513 Rug.—Household industry, women of Milas, Menteshé.

514 Carpet.—Household industry, Berkoftcha, near Nish.

515 Carpet, called Raganieh.—Manufactured by the Turcoman Hussein, Aleppo.

516 Carpet.—Household industry, villages of Trebizond.

517 Rug.—Household industry, Sharkeny, Nish.

518 Ihrams, or divan-covers.—Manufactured by Hadgi Ali's family, Isladé, Sofia.

519 Carpet.—Manufactured by the Yuruks of Guzel-Hissar, Aïdin.

520 Carpet.—Manufactured by Kayala, a Greek girl of Sushak.

521 Carpet, called Erish.—Manufactured by Hadgi Ahmet, Kutaya.

522 Carpet.—Manufactured by Omer Effendi, Ina, province of Hoodavendigniar.

523 Carpet saddle-bag, called Heybey.—Manufactured by the carpet-makers of Tripoli.

524 Carpet.—Made at Guzel-Hissar, Aïdin.

525 Carpet.—Manufactured by the Christian women, Sharkeny, Nish.

526, 527 Carpet, bed, and cushion-cover.—Manufactured by the Arab women, Tripoli, Barbary.

528 Rug.—Manufactured in Kelgind, Trebizond.

529 Carpet and rug.—Household industry, women of Tripoli, Barbary.

530 Carpet saddle-bag.—Manufactured by Mehemed Ishmé, Trebizond.

531 Rug.—Household industry, manufactured by Fasmé, Trebizond.

532, 533 Rugs.—Household industry, Guerdes, Aïdin.

534 Stuff in silk and gold thread, called Selimieh.—Manufactured by Gulmezoglou, Constantinople.

535 Stuff in silk and gold thread, called Mahmoudieh.—Manufacture of Constantinople.

536, 537 Satin, embroidered in gold.—Embroidered by Gulmezoglou, Constantinople.

538 Stuff in goats' wool, called Shalaki, embroidered in gold.—Embroidered by Tuysuzoglou, Constantinople.

539 Taffeta, embroidered in gold.—Embroidered by Hadgi Mihal, Constantinople.

540 Velvet cap, embroidered in gold.—Embroidered by Gulmezoglou, Constantinople.

541 Cotton and silk stuff, called Hakir.—Manufactured by Tuysuzoglou Gaspar, Constantinople.

542, 543 Cotton and silk stuff, called Idgadié tchitari.—Manufactured by Gulmezoglou, Constantinople.

544 Shawl in stuff, called Shalaki, embroidered in silver.—Embroidered by Hadgi Mihal, Constantinople.

545, 546 Taffeta, embroidered in gold.—Embroidered by Gulmezoglou, Constantinople.

547 Taffeta, embroidered in gold.—Embroidered by Hadgi Mihal, Constantinople.

548—550 Cotton and silk stuffs, called Ĉutni and Hakir.—Manufactured by Tuysuzoglou Gaspar, Constantinople.

551—558 Cotton and silk stuff, called Idgadié.—Manufactured by Gulmezoglou, Constantinople.

559 Cotton and silk stuffs, called Hakir.--Manufactured by Tuysuzoglou, Constantinople.

560 Cotton and silk stuffs, called Idgadiè.—Manufactured by Gulmezoglou, Constantinople.

561, 562 Shawls embroidered in silk and gold; 563, 564 Muslin, embroidered in silk and gold, for ladies' shirts and dresses.—Embroidered by Sofialioglou's Daughter, Constantinople.

565, 566 Muslin, embroidered in silk and gold, for ladies' shirts and dresses.—Embroidered by Gulmezoglou's Daughter, Constantinople.

567 Scarf, embroidered in gold.—Embroidered by Sofialioglou's Daughter, Constantinople.

568 Silk, cotton, and gold stuff, called Mahmoudieh.—Manufactured by Gulmezoglou, Constantinople.

569 Stuff in goats' wool, called Shalaki, embroidered in silver and gold.—Embroidered by Tuysuzoglou's Daughter, Constantinople.

570 Stuff in goats' wool, called Shalaki, embroidered in silver and gold.—Embroidered by Hadgi Mihalis, Constantinople.

571, 572 Muslin kerchiefs, called Tchevrés, embroidered in gold.—Embroidered by Horoussé, Constantinople.

573 Coffee-service cover, embroidered in gold and spangles.—Embroidered by Floru, Constantinople.

574 Cotton towels, embroidered in silk and gold.—Embroidered by Marigo, Constantinople

575 Cotton towels, embroidered in gold.—Embroidered by Horoussé, Constantinople

576 Satin bed-cover, embroidered in gold.—Embroidered by Hadgi Ahmet's Family, Constantinople.

577 Sedgade or rug, embroidered in gold.—Embroidered by Floru, Constantinople.

578 Towel, embroidered in gold. Embroidered by Hassan Aga's Family, Constantinople.

579. 580 Towels, embroidered in gold.—Embroidered by Horoussé, Constantinople.

581 Muslin cushion-covers, embroidered in silk.—Embroidered by Hadgi Mustafa's Family, Constantinople.

582 Kerchiefs or tchevrés, embroidered in silk and gold.—Embroidered by Floru, Constantinople.

583 Kerchiefs or tchevrés, embroidered in gold.—Embroided by Horoussé, Constantinople.

584 Scarf, embroidered in gold; 585 Checked muslin, embroidered in silk, called Idgadie.—Embroidered by Gulmezoglou, Constantinople.

589 Handkerchiefs, embroidered in silk and gold.—Embroidered by Hadgi Ahmet's Family, Constantinople.

587, 588 Towels, or covering for the bath, called Fouta, cotton, silk, and gold.—Manufactured by Hadgi Selim Aga, Constantinople.

589 Bed-cover, cotton, silk, and gold; 590 Table-cover, cotton, silk, and gold.—Manufactured at Merde.

521 Merino table-cover, embroidered in silk.—Embroidered in silk by Marigo, Constantinople.

592 Merino bed-cover, embroidered in silk; 593 Taffeta bed-cover, embroidered in silk.—Embroidered by Mustafa's Family, Constantinople.

594 Velvet jacket, called Salta, embroidered in gold.—Embroidered by Gulmezoglou, Constantinople.

595 Bed-cover in stuff, called Shalaki, embroidered in silk and gold.—Embroidered by Hadgi Ahmed Aga's Family, Constantinople.

596 Silk crape, or gauze shirting and sheeting.—Manufactured by Hadgi Mustafa Aga, Constantinople.

597 Silk crape, or gauze shirting and sheeting.—Manufactured by Hadgi Selim Aga, Constantinople.

598, 599 Silk crape, or gauze shirting and sheeting.—Manufactured by Hadgi Mustafa Aga, Constantinople.

600 Silk crape, or gauze shirting and sheeting.—Manufactured by Osman Aga, Constantinople.

601 Silk crape, or gauze shirting and sheeting, called Halali.—Manufactured by Hadgi Halil Aga, Constantinople.

602 Silk crape, or gauze shirting and sheeting, called Halali.—Manufactured by Hadgi Mehemed Aga, Constantinople.

603, 604 Silk crape, or gauze shirting and sheeting.—Manufactured by Hadgi Mustafa Aga, Constantinople.

605 Silk crape, or gauze shirting and sheeting.—Manufactured by Hadgi Sherif Aga, Constantinople.

606—612 Mashlas, or cloaks assorted; 613—615 Table-covers with napkins, in silk and gold (the same stuff is used for furniture); 616 Silk and cotton head-kerchief and gear for the Bedouin Arabs; 617 Red Silk shawl.—Manufacture of Damascus.

618, 619 Checked silk gauze for musquito netting.—Household industry, Christian women of Cyprus.

620—624 Printed cotton stuff for furniture, &c. &c.—Printed at Cyprus.

625 Silk gauze shirting; 626 Silk gauze shirt.—Household industry, women of Cyprus.

627 Sample of the silk with which the gauze shirting is made.

628 Cotton stuff, called Aladgia.—Manufacture of Tomasoglou Habit, Trebizond.

629 Cotton stuff, called Offa bezy.—Manufactured by Nicola, Denizlou, district of Trebizond.

630 Cotton shawl and head-kerchief.—Manufactured by Tocadlioglou Mustafa, district of Trebizond.

631 Cotton cloth.—Manufacture of Cara-hissar.

632, 646 Cotton and silk stuffs for dresses and furniture.—Manufacture of Damascus.

647 Silk sash, imitation Tripoli; 648, 651 Silk and false gold and silk turbans; 652 Silk and cotton sash, called Houro; 653, 654 Silk and false gold thread turbans; 655 Silk and cotton shawl; 656, 657 Yellow and red taffeta; 658 Silk and gold towel for the bath; 659 Cotton cloth, called Aladgia; 660, 661 Towels for the bath; 662 Woollen saddle-girth; 663 Silk and cotton crape (used for head-cover by the Bedouin Arab women); 664 Cotton shawl; 665 Bath towel or covering; 666 Cotton stuff, called Aladgia; 667 Muslin embroidered in silk, called Abaneh; 668 Covering for the head, called Keffié; 669 Jackets, called Guézy hirka.—Made in Damascus with European materials.

670 Cotton stuff, silk border, used for turbans or covering for the head; 671 Silk handkerchief.—Manufacture of Damascus.

672, 673 Cotton bed and cushion cover; 674, 676 Cotton stuff; 677 Sash, called Hamakiar; 678, 679 Towels.—Manufacture of Magnesia, province of Hoodavendigniar.

680 Towels.—Manufactured by Ali Aga, Broosa, province of Hoodavendigniar.

681 Woollen sash.—Manufactured at Kodgé-hissar, Angora.

682 Cotton cushion-covers.—Manufactured at Kalounfer, Philipopoli.

683, 684 Cotton cushion and sofa-covers.—Manufactured at Amassiah.

685 Cotton cushion and rug, or Sedgadé.—Manufactured at Damascus.

686 Cotton sheeting.—Manufactured at Nish, Servia.

687 Cotton shirting.—Manufactured at Damascus.

688 Cotton sheeting; 689, 690 Towels, cotton and silk and cotton and linen; 691 Cotton and linen cloth; 692 Cotton and linen table-napkin.—Manufactured at Aïdin.

693 Cotton cloth.—Manufactured at Seraï-Keny, Trebizond.

694 Cotton and silk sheeting.—Manufactured at Aïdin.

695 Cotton shirting; 696 Silk shirting.—Manufactured at Nish, household industry.

697 Linen cloth.—Manufactured at Aïdin.

698 Linen cloth.—Manufactured at Trebizond.

699 Towels, or covering for the bath in silk.—Manufactured by Mehemet, Aïdin.

700 Cotton stuff, called Aladgia.—Manufactured by Tursuz, at Cadi, district of Trebizond.

701 Cotton stuff, called Aladgia.—Manufactured by Hadgi Mehemet, Denislou, district of Trebizond.

702 Cotton stuff, called Aladgia; 703 Towel, or cloth for the bath.—Manufactured by Mehemet, Nizza, Aïdin.

704, 705 Black lining.—Manufactured by Mollah Eumeroglou, Trebizond.

706 Common woollen cloth, called Shayak.—Manufactured at Tripoli, Barbary.

707 Cotton stuff, called Aladgia.—Manufactured by Ismael Oute, Denizlou, district of Trebizond.

708 Cotton shirting.—Manufactured at Damascus.

709 Woollen cloths for the bath.—Manufactured by Ibrahim, Merdgemend, Tripoli, Barbary.

710 Linen Arab shirt.—Manufacture of Tripoli, Barbary.

711 Cotton cloth.—Manufactured at Caradgia, district of Aïdin.

712 Woollen cloth, or covering for the bath.—Manufactured by Hadgi Ali, Tripoli, Barbary.

713, 714 Linen cloth; 715 Linen Arab shirt.—Manufactured at Tripoli, Barbary.

716 Riding boots, red morocco, embroidered in false gold.—Made by the saddlers of Tripoli, Barbary.

717 Women's shoes. Made by the shoemakers of Tripoli, Barbary.

718 Red morocco Arab belt for arms, embroidered in false gold.—Made by the saddlers of Tripoli, Barbary.

719 Shot-pouch, worked with glass beads; 720 Sandals.—Made at Soudan, Tripoli, Barbary.

721, 722 Red morocco boots, embroidered.—Made by the saddlers of Tripoli, Barbary.

723, 724 Yellow slippers, embroidered, ladies' and men's.—Made by the shoemakers of Tripoli, Barbary.

725, 727 Riding boots.—Made by the saddlers of Candia.

728 Cartridge-box.—Manufacture of Ahmet Malik, Boudourdgia, district of Scodra.

729 Cartridge and shot-box, with silk tassels; 730 Bridle and appurtenances. — Manufactured by the saddlers of Scodra.

731 Cartridge-pouch.—Manufactured by the saddlers of Trebizond.

732 Ladies' slippers.—Manufactured by the shoemakers of Magnesia.

733 Belt for arms, cartridge and shot pouch.—Manufactured by the saddlers of Magnesia.

734, 736 Cotton and silk stuff for dresses; 737 Arab shirt; 738 Window curtain.—Manufactured at Tripoli, Barbary.

739 Woollen sashes.—Manufactured at Haskeny, district of Philipopoli.

740 Ornament for the necks of beasts of burthen, called Kisrak.—Made by the saddlers of Tripoli, Barbary.

741 Cotton twist.—Household industry, women of Drama.

742, 743 Cotton twist, white and dyed.—Household industry, Ismid.

744, 745 Cotton twist, white and dyed.—Household industry, Magnesia, district of Hoodavendigniar.

746 Cotton twist.—Household industry, Aïdin.

747, 748 Cotton twist; 749 Linen thread, used for nets.—Household industry, Cara-hissar, district of Trebizond.

750, 753 Linen thread.—Spun in the villages about Trebizond.

754 Linen thread.—Spun at Tireh, district of Aïdin.

755 Cotton twist.—Spun at Bougdan, district of Aïdin.

756, 760 Worsted thread, white and dyed.—Household industry, Sharkeny, district of Nish.

773, 774 Ostrich feather fans.—Made at Tripoli, Barbary.

775, 779 Worsted thread.—Household industry, Sharkeny, district of Nish.

780 Horse-hair thread; 781 Cotton thread.—Household industry, Magnesia, Hoodavendigniar.

782 Red worsted sash, for the head or waist.—Household industry, Tripoli, Barbary.

783, 789 Woollen stockings.—Household industry, Pazardgik, district of Philipopoli.

790 Woollen stockings.—Household industry, Eskishehr, district of Hoodavendigniar.

791 Woollen stockings.—Household industry, Salonica.

792 Woollen stockings.—Household industry, Trebizond.

793, 798 Woollen stockings.—Household industry, Siv-as.

799 Worsted stockings.—Household industry, Gumushnané, district of Trebizond.

800, 805 Worsted stockings.—Household industry, Drama.

806 Worsted stockings.—Household industry, Ianina.

807, 808 Woollen braid, assorted.—Household industry, Philipopoli.

809 Mohair yarn.—Household industry, Angora.

810, 811 Silk ribbon and braid.—Manufacture of Ianina.

812 Cotton braid.—Household industry, Magnesia, district of Hordavendigniar.

813 Woollen braid.—Household industry, Philipopoli.

814, 815 Gold and silk and gold thread and cord.—Manufacture of Ianina.

816 Silk and gold reins.—Manufactured by Ali, Tireh, district of Aïdin.

817 Gold lace.—Manufactured by Hadgi Moses, Smyrna.

818 Gold leaf; 819 Silver leaf.—Manufactured by the gold-beaters of Constantinople.

820 Silk thread.—Manufactured at Magnesia, district of Hoodavendigniar.

821 Ramrod, silver and steel; 822 Inkstand, with pencase, silver and steel; 823 Sabre, mounted in silver and steel; 824 Shot-boxes, cartridge-box, and oil-box, mounted in silver and steel; chain, with knife and steel.—Manufactured by the armsmiths of Ianina.

825 Dagger, with gold and steel mountings.—Manufactured by Osman, Trebizond.

826 Pistols; mounted in silver.—Manufactured by Hafiz Ghani, Trebizond.

827, 828 Gun-locks.—Manufactured by the gunsmiths of Trebizond.

829 Pistol-locks, steel and gold.—Manufactured by Hussein, Candia.

830, 831 Pistols, gilt silver and steel and silver mountings; 832 Watch-chain, silver and steel.—Manufactured by the gunsmiths of Ianina.

833 Knives, with steel and silver handles.—Manufactured at the Dardanelles.

834 Carpet.—Household industry, women of Tripoli.

835, 836 Rugs.—Household industry, Sophia.

837 Rug.—Manufactured by the Turcomans of Homs, district of Damascus.

838, 839 Carpets.—Household industry of Ladik, district of Koniah.

840 Rug.—Manufactured at Guzel-Hissar, district of Aïdin.

841 Carpet saddle-bag.—Manufactured at Bergama, district of Baluk-Hissar.

842 Carpet saddle-bag.—Manufactured at Milas, Aïdin.

843 Rug.—Household industry, women of Aïdin.

844 Woollen saddle-cover, used by the Arabs of Homs.—Household industry, women of the district of Damascus.

845 Ihram, or sofa-cover.—Manufactured at Esvakia, Candia.

846 Blue cloth, called Aba.—Manufactured at Lashid, Candia.

847 Woollen and horse-hair bag.—Manufactured at Esvakia, Candia.

848 Blue cotton cloth, called Boghassi.—Manufactured at Aïdin.

849 Towels for the bath.—Manufactured by Hateboglou, Denizlou, district of Trebizond.

850 Linen cloth.—Household industry of Dorton, district of Trebizond.

851, 852 Cloth, called Aba and Kiebé.—Manufactured at Avret-Hissar, district of Salonica.

853 Woollen stuff, called Shali.—Manufactured at Angora.

854 Cloth, called Aba.—Manufactured at May Dagh, district of Salonica.

855 Cloth, called Aba.—Manufactured at Haskeny, district of Philipopoli.

856 Cloth, called Aba.—Manufactured at the Aba manufactory of Baluk-Hissar.

857 Woollen cloth.—Manufactured by F. Steliano, Bucharest, Wallachia.

858 Goats'-wool carpet, called Tzoll; 859 Rope, made from the bark of the lime tree.—Manufactured by the peasantry of Wallachia.

860 Tanned sheep's skin; 861 Morocco skins.—Dressed by the farmers of Wallachia.

862 Rope, made from the bark of the lime tree; 863 Woollen cloth, called Aba.—Made by the peasantry of Wallachia.

864 Spermaceti candles.—Made at Bucharest.

865 Silk.—Dyed at Bucharest.

866 Rope, made from a plant called Elbessau.—Made at Tripoli, Barbary.

867, 869 Rope.—Made in most villages of Ordou, district of Trebizond.

870, 872 Rope and twine.—Made at Eudemish, district of Aïdin.

873 Flower in gold and pearls; used as an ornament for the head.—Household industry, Gulmezoglou's Daughter, Constantinople.

874, 875 Head-kerchiefs, gold and pearl and silver fringes; 876 Silver fringe, for head-kerchiefs.—Embroidered by Sofialioglou's Daughter, Constantinople.

877 Silver fringe, for head-kerchiefs.—Worked by Gulmezoglou's Daughter, Akabé, Constantinople.

878 Silk fringe, for ladies' cloaks.—Worked by Gulmezoglou's Daughter, Uskuk, Constantinople.

879, 880 Embroidered bags.—Embroidered by Sofialioglou's Daughter, Casinco, Constantinople.

881 Silver garland.—Worked by Gulmezoglou's Daughter, Akabé.

882, 885 Woollen furniture covering.—Manufactured at Aly Teheleby, Philipopoli.

886 Cotton cloth, called Boghassi.—Manufactured by Hadgi Ibrahim Aga, district of Trebizond.

887 Cotton cloth, called Boghassi.—Manufactured at Soudan, district of Tripoli, Barbary.

888 Cotton and silk shirting.—Household industry, women of the district of Aïdin.

889 Ihram, or sofa-cover.—Manufactured at Candia.

890 Common white woollen cloth; 891 Araba Ihram, or covering for carriages.—Household industry, women of Caloufer, Philipopoli.

892 Common woollen cloth.—Household industry, women of Keshieh, Philipopoli.

893, 895 Sedgadé ihrams, or rugs.—Manufactured at Ahi Tehelebi, Philipopoli.

896 Ihram, or sofa-cover.—Manufactured at Mihalaki's Factory, Philipopoli.

897 Ihram, or sofa-cover.—Manufactured at Ahi Tehelebi, Philipopoli.

898, 901 Saddles and appurtenances.—Made at Damascus.

902 Rug.—Manufactured at village of Said Eli, district of Koniah.

903, 904 Ihrams.—Manufactured at Badié Nishé, district of Tripoli, Barbary.

905 Rug.—Household industry, inhabitants of Tekké, district of Aïdin.

906 Carpet.—Household industry, women of Adana.

907 Rug.—Worked by the wife of Hadgi Osman, Koulah, province of Hoodavendigniar.

908 Carpet.—Manufactured at Kaloufer, district of Philipopoli.

909 Carpet.—Manufacture of Gumurdgin, district of Drama.

910 Carpet.—Manufacture of Tekkeh, district of Aïdin.

911 Woollen stuff, called Kiebbe, used for cloaks; 912 Albanian cloak, in the same stuff.—Manufacture of Ianina.

913—921 Ladies' head-kerchiefs, called Yazma Yemeni, *painted by the hand*.—Painted by Morikoglou and Family, Constantinople.

922 Silk stuff, for dresses.—Manufacture of Constantinople.

923 Purse, embroidered silk fringe.—Embroidered by Sofialioglou's Daughter, Constantinople.

926 Silk fringe, for kerchiefs.—Embroidered by Yani of Ortakeny's Daughter, Constantinople.

927 Silk embroidered bag, with gold tassels.—Embroidered by Sofialioglou's Daughter, Constantinople.

928 Silk thread, coloured.—Spun at Constantinople.

929, 930 Silk fringe, for kerchiefs.—Worked by Yani of Ortakeny's Daughter, Constantinople.

931 Bag, embroidered in silk, gold, and pearls; 932 Silk fringe, for head-kerchiefs.—Embroidered by Sofialioglou's Daughter, Constantinople.

933 Silk fringe, for head-kerchiefs; 934 Silk embroidered purses.—Embroidered by Yani of Ortakeny's Daughter, Constantinople.

934 Silk embroidered purses.—Embroidered by Yani of Ortakeny's Daughter, Constantinople.

935 Felt used for tents, &c.—Manufactured by Hadgi Hussein, Smyrna.

936, 937 Felt, used for tents, &c.—Manufactured at Cara-Hissar.

938 Felt used for tents, &c., called Sivri Kaya.—Manufactured at Pazardgik, district of Philipopoli.

939—941 Albanian cloaks.—Manufactured at Ianina.

942, 943 Coarse cloth, called Aba.—Manufactured at the Aba Factory, Baluk-Hissar.

944 Military cloth.—Manufactured at Mihalakis' Factory, Philipopoli.

945 Cotton towels.—Manufactured at Damascus.

946 Cotton cloth.—Manufactured at Arbas, district of Aïdin.

947 Cotton sash.—Manufactured at Drama.

948 Linen cloth.—Manufactured at Burgney, district of Aïdin.

949—963 Silver and gilt silver lace.—Manufactured by Serkis, Constantinople.

964—967 Gold and silver fringe, for dresses.—Worked by Boghos, Constantinople.

968—972 Gilt silver lace, for sword belts.—Manufactured by Serkis, Constantinople.

973—982 Gold and gold and silver fringe, for dresses.—Worked by Boghos, Constantinople.

983 Slippers, called Filar, embroidered in gold and pearls.—Embroidered by the girl Istché, Constantinople.

984 Slippers, called Filar, embroidered in gold and pearls.—Made and embroidered by Mustafa Aga, Constantinople.

985 Slippers, called Ship-ship, embroidered in gold and pearls.—Embroidered by Terzy's Wife, Constantinople.

986 Slippers, called Ship-ship, embroidered in gold and pearls.—Household industry, Constantinople.

987 Slippers, called Filar, embroidered in gold and pearls.—Embroidered by the girl Istché, Constantinople.

988 Slippers, called Filar, embroidered in gold and pearls; 989 Slippers, called Ship-ship, embroidered in gold and pearls.—Embroidered by the girl Bukudgy, Constantinople.

990 Slippers, called Ship-ship, embroidered in gold and pearls.—Embroidered by Penbé Cadiu, Constantinople.

991 Slippers, called Filar, embroidered in gold and pearls.—Embroidered by Carabet's Wife, Constantinople.

992, 993 Looking-glasses, covers embroidered in gold.—Embroidered by the girl Carabash, Constantinople.

994 Slippers, called Ship-ship, embroidered.—Embroidered by Terzy's Wife, Constantinople.

995 Slippers, embroidered in gold and pearls.—Embroidered by Carabet's Wife, Constantinople.

996 Slippers, embroidered in gold and pearls.—Embroidered by Terzy's Wife, Constantinople.

[The embroidery (principally in gold, gold and pearls, or pearls, silver, and gold) of the slippers in this department, is generally of superior beauty and execution; but some of the specimens may be regarded as *first-rate* exemplifications of an art which is nowhere more highly appreciated than in Turkey.]

997 Saddle-girths, worked in gold thread.—Made by the manufacturers of horse-girths, &c., Constantinople.

998 Braces, embroidered in gold and pearls.—Household industry of Constantinople.

1057, 1059 Morocco and common leather.—Manufactured at Drama.

1058, 1064 Morocco and common leather.—Manufactured at Koniah.

1065 Morocco and common leather.—Manufactured at Smyrna.

1069 Sheep-skin cloak, worn by shepherds.—Made at Koniah.

1070 Sole leather.—Tanned at Trebizond.

1071 Sole leather.—Tanned at Guzel-Hissar, district of Aïdin.

1072 Riding or shooting boots.—Made at Rhodes.

1073 Red morocco skins.—Tanned and dressed at Rhodes.

1074, 1075 Leather cushion covers.—Made at Tripoli, of Barbary.

1076 Woollen ihrams, or covers.—Manufactured at Ianina.

1077—1080 Flowered taffeta; 1081, 1082 Figured satin, for furniture; 1083—1087 Figured taffeta, for dresses; 1088—1090 Figured satin; 1091, 1092 Velvet cushion covers; 1093 Silk quilting; 1094 Figured satin.—Manufactured at the Imperial Government Steam Factory of Hereké, Ismid.

1095, 1097 Tobacco bags and purses, embroidered in gold.—Household industry, Constantinople.

Works in the precious metals made by the goldsmiths of Damascus.

1097 Silver zone, with ornament for the front, called Keht, for ladies.

1098 Silver cap, or fez, for ladies.
1099 Silver ornament for ladies' caps, with tassel.
1100 Silver ornament for the head, called Zulfi-talik.
1101 Silver Hama, worn by the Felah women as a talisman and note-box.
1102 Silver bracelets.
1103 Silver anklets.
1104 Silver ornament for the shirt collar, called Sheuké.
1105 Gold necklaces.
1106 Gold ear-rings.

1107 Gold bracelet.—Made by the goldsmiths of Koniah.

1108 Narguilé, or water-pipe, mounted in silver.—Made at Damascus.

1109 Silver water-jug; 1110, 1111 Damascened cup and snuff-box.—Made by the silversmiths of Ianina.

1112 Purse, false gold and silver; 1113 Gold bracelets.—Made at Damascus.

1114 Silk and false gold purse.—Made at Amassiah.

1115, 1116 Lulés, or pipe-bowls in clay; 1117 Inkstand and appurtenances in clay.—Made by **Mahmoud**, Roustchouk.

1118, 1120 Lulés, or pipe-bowls in wood, mounted in silver and brass.—Made by **Osman**, Trebizond.

1121 Lulés, or pipe-bowls in white clay; Ecume de mer.—Made by **Hadgi Ibrahim Aga**, Eski-shehr, Broosa.

1122, 1129 Lulés, or pipe-bowls in clay, plain and gilt.—Made by **Hoorshid Aga**, Constantinople.

1130, 1131 Lulés, or pipe-bowls in clay, plain and gilt.—Made by **Ali Baba**, Constantinople.

1132 Lulés, or pipe-bowls in clay, plain and gilt.—Made by **Hoorshid Aga**, Constantinople.

1133 Lulés, or pipe-bowls in clay, plain and gilt.—Made by **Ali Baba**, Constantinople.

1134, 1138 Lulés, or pipe-bowls in clay, plain and gilt.—Made by **Hoorshid Aga**, Constantinople.

1139 Red earth from Nish, which, mixed with the white earth of Roustchouk, forms the clay with which the Lulés are made.

1140, 1142 Clogs worn in the bath and out of doors.—Made at Damascus.

1143, 1144. Clogs, mother-of-pearl mosaic-work and wood, ornamented with silver nails, used in the bath.——Made by **Ahmed**, Constantinople.

1145 Clogs, mother-of-pearl mosaic-work.—Made by **Sofdgioglou**, Scutari, Constantinople.

1146 Ladies' boots, called Tchedik, with slippers.——Made by **Ahmed**, Constantinople.

1147 Men's boots, with slippers.—Made by **Osman**, Constantinople.

1148, 1151 Embroidered coffee-service covers; 1152 Lahore shawl coffee-service cover; 1153 Embroidered cotton handkerchiefs; 1154 Embroidered kerchief, or Tcheuré; 1155 Embroidered outchkours, or band for the trousers.—Household industry of Constantinople, **Sherif Aga**, exhibitor.—Manufacture of Constantinople.

[The finer specimens of embroidery which have been furnished from so many provinces of Turkey, impart a high degree of interest to this collection, not only by reason of their extreme richness and novelty, but in an especial manner on account of the spirit and grace of design exhibited in some of the patterns. This remark applies to the house furniture, caparisons, and housings exhibited, as well as to the scarfs, shawls, sheets, bath clothes, and other female habiliments. The muslin robes, shawls, and scarfs are of that elaborate embroidery, in gold, silver, and coloured threads, occasionally intermixed with pearls, which is "worked true" on both sides; the reverse being, in every respect, as finished and carefully wrought as the front side. These finer embroideries are very expensive, even in Turkey; but all of them attest the extraordinary height to which the magnificence of personal luxury, in all that regards personal attire, has attained among the wealthier classes of Turkish society. In this class of fabrics there is a net of that ultramarine blue which is highly prized by English manufacturers, on account of the delicacy of its texture and colours. Some sheets, embroidered by the women of Candia; the scarfs, by Baltzet Oglou; the coffee-service coverlets, of superb execution; the gold and silver worked sashes of coloured fabrics, and of these, one especially, admirable for its freedom of the design and the high relief of its work, as is also a gold-embroidered taffeta: and a velvet cap, exquisitely worked in gold, are among the most precious in this class of contributions.]

1156, 1157 Silk and gold towels for ablutions, called Abdest foutah.—Manufactured at Constantinople.

1158 Embroidered pillow-covers.—Household industry, Constantinople.

1159 Silk gauze sheets.—Manufactured at Constantinople.

1160, 1161 Embroidered pillow-covers; 1162—1167 Embroidered bed and table-covers.—Household industry, Constantinople; **Sherif Aga**, exhibitor.

1168 Carpet horse-cover; 1169 Carpet cushion-covers; 1170 Rug; 1171 Carpet cushion-cover; 1172 carpet saddle-bag.—Manufactured at Kir, district of Koniah.

1173 Rug.—Manufactured by **Hassan Dayi**, Mapla, district of Monastir.

1174 Carpet.—Manufactured by **Mator, Hadgia Bashi**, district of Monastir.

1175 Woollen stuff, for cloaks and covers.—Manufactured by **Tarpo**, Guergé, district of Monastir.

1176 Albanian cloak, called Laseuk.—Manufactured at Monistir.

1177 Meshla, or cloak; 1178 Bed-cover; 1179 Mattress-cover.—Manufactured in the district of Damascus.

1180 Printed headkerchiefs.—Printed by **Simionakioglou**, Smyrna.

1181 Cotton stuff, called Boghassi.—Manufactured by **Ali Aga**, Denizlou, district of Trebizond.

1182 Cotton and linen cushion-cover.—Household industry, women of Trebizond.

1183 Printed head kerchiefs.—Printed ta Oktché Klissé, district of Philipopoli.

1184, 1185 Cotton sash and towel; 1186 Woollen sash.—Manufactured at Angora.

1187 Fur, wolf-skin; 1188 Fur, fox-skin, mixed, called Nafeh; 1189 Fur, fox-skin, called Dgilgava; 1190 Fur, lamb-skin.—Dressed by the furriers of Koniah.

1191 Fur, sable.—Dressed by **Tedaïdgi**, Kesrieh, district of Monastir.

1192 Fur, lamb-skin.—Dressed by the furriers of Monastir.

1193 Fur, fox-skin, mixed, called Nafeh.—Dressed by the furriers of Nish.

1196 Fur, lynx-skin; 1197 Fur, sable; 1198 Fur, fox-skin, called Erzeroum dgilgava; 1199 Fur, fox-skin, called Bosna dgilgava; 1200 Fur, fox-skin, mixed, called Erzeroum nafeh; 1201 Fur, fox-skin, called Bosna nafeh; 1202 Fur, sable, called Gamurdgin sansar patchassi; 1203 Fur, sable, called Zerdeva; 1204 Fur, wolf-skin; 1205 Fur, called Erzeroum selvy; 1206 Fur, called Erzeroum boghassi; 1207 Fur, called Bosna kafass.—Dressed by **Hampartzoun**, Constantinople, exhibitor.

[Among these furs, that of a grey squirrel-coloured grouse, on which have been regularly superimposed the fine pencil hairs that surmount the ears of the true lynx, in oval spots resembling ermines' tails (1023) is of an excellent quality and appearance. But the richest varieties have been contributed by the sable. Here is also a winter upper robe of a Turkish lady, in fine velvet, the lining and trimmings of which are from a golden brown fox, of remarkable richness and beauty. The greyish-yellow wolf skin, marked "from Constantinople," and a very large dark brown bear skin, from Moldavia, of formidable dimensions, and rich in colour, are deposited at a few paces from the lynx fur, already mentioned.]

1208—1212 Red caps, or fezzes.—Manufactured at the Company's Fez Factory, under the direction of Hadgia Ohaneo, Constantinople.

1214, 1215 Red caps, worn by the countrywomen in Albania.—Manufactured and embroidered at Ianina.

1213 Silk tassels for red caps, called Puscules.—Manufactured at Constantinople.

Spoons in tortoiseshell, ivory, coral, &c.:—1216—1219 Made by Said Aga; 1220 Emin Aga; 1221, 1222 Said Aga; 1223, 1225 Emin Aga; 1226, 1227 Said Aga; 1228 Emin Aga; 1229 Said Aga; 1230 Emin Aga; 1231—1234 Said Aga; 1235 Emin Aga; 1236 Said Aga; 1237 Emin Aga, Constantinople.

1238—1242 Combs, tortoiseshell, ivory, and wood.—Made by Said Aga, Constantinople.

1243, 1244 Ivory maktas for mending pens.—Made by Dervish Bekir Aga, Constantinople.

1245 Pen-knives.—Manufactured by Feni, Constantinople.

1246, 1247 Reed flutes, called Nay.—Made by Hadgi Békír, Constantinople.

1248 Ebony kashak; 1249, 1250 Ebony mouttekias—sticks used as a support in a sitting posture.—Carved by Abou Bekir, Constantinople.

1251—1274 Turned and carved articles.—Manufactured by Ali Baba, Constantinople.

1275 Silver zarf, or coffee-cup stand.—Manufactured at Koniah.

1276 Silver zarf.—Manufactured at Aïdin.

1277, 1278 Silver zarf, filigree work.—Manufactured at Monastir.

1279 Silver zarfs.—Manufactured at Nish.

1280 Silver zarfs.—Manufactured at Tireh, district of Monastir.

1281, 1282 Bracelets, gold and silver.—Manufactured by Gregor, Trebizond.

1283 Bracelets, gold; 1284 Necklace, gold.—Manufactured at Koniah.

1285 Necklace, silver.—Manufactured at Moula, Magnesia, district of Aïdin.

1286, 1287 Bracelets, silver.—Manufactured at Menteshé, district of Aïdin.

1288 Bracelets, silver; 1289 Necklace, silver.—Manufactured at Nish.

1290 Bracelets, gold; 1291 Ear-rings, gold.—Manufactured at Koniah.

1292 Ear-rings, gold; pearl drops.—Manufactured at Trebizond

1293, 1294 Silver and gold, Nisscha moubafessi, in which charms, &c. are inclosed.—Manufactured at Koniah.

1295 Knife, with silver sheath.—Manufactured at Candia.

1296 Silver Nisscha, or cover for charms.—Manufactured at Koniah.

1297 Silver watch chain.—Manufacture of Candia.

Silver girdle for ladies:—1298 Manufactured by Avedik, Guzel-Hissar, Aïdin; 1299 Manufactured at Koniah.

1300, 1301 Looking-glass covers, silver filigree work.—Manufactured at Ohri, Monastir.

1302 Albanian cartridge and oil boxes.—Manufactured by Matro, silversmith, Scodra.

Scissors, inlaid gold and silver handles:—1303 Manufactured at Sophia; 1304 Manufactured by Kircar, Adana; 1305 Manufactured at Kutaya.

1306 Gold ornaments, set with pearls, for children's caps.—Made at Koniah.

1307 Silver ear-rings.—Made at Nish.

1308 Silver scissors. — Manufactured by Hassan, Bosnia.

1309—1317 Worsted ihrams, or covers for sofas, carriages, boats, &c. Manufactured in the interior, and dyed at Constantinople.

Soap, common and scented:—1318 Manufactured at Adana; 1319, 1320 Manufactured at Adrianople; 1321 Manufactured at Adana; 1322—1328 Manufactured at Adrianople.

Soap, common:—1329, 1330 Manufactured in Candia. Soap Manufactory of Nasif Aga; 1331 Manufactured at Damascus; 1332, 1333 Manufactured at Tripoli, Barbary.

1334 Writing paper.—Manufacture of the Paper-mill of Smyrna, established by the family of Duzoglou, under the special protection of H. M. the Sultan.

1335, 1336 Book-muslin scarfs, embroidered in silk and gold; 1337 Book-muslin dress, embroidered in gold; 1338, 1339 Book-muslin scarfs, embroidered in gold; 1340 Book-muslin dress, embroidered in gold.—Household Industry, Constantinople, Sofialioglou, exhibitor.

1341—1374 Turned work.—Manufactured by Emin Aga, Constantinople.

1375 Knife.—Manufactured at Candia.

1376 Knives; 1377 Ramrods,—Manufactured at Philipopoli.

1378—1380 Turned work; 1381, 1382 Household industry, Constantinople, Sofialioglou, exhibitor.—Manufactured by Emin Aga, Constantinople.

1384—1386 Spoons, wooden. — Made at Has-keny, Philipopoli.

1387—1392 Spoons, wooden, horn, coral, and mother-of-pearl; 1393, 1394 Combs.—Made at Taragli, district of Ismid.

1395 Albanian knife and steel. — Manufactured at Ianina.

1396 Narguilé, or water-pipe, mounted on brass.—Manufactured at Damascus.

1397 Brass lamp.—Manufactured at Candia.

1398 Iron bits.—Manufactured at Tripoli, Barbary.

1399, 1400 Copper ewers and basins.—Manufactured by Mehemet Effendi, Constantinople.

1401, 1402 Brass and copper dishes for carrying victuals, called Sefer-tas.—Manufactured at Castamony.

1403 Copper and brass plates, with covers; 1404 Copper and brass soup bowls, with covers.—Manufactured at Trebizond.

1405, 1406 Copper dinner services, with keys for undoing covers.—Manufactured by Kircar, Trebizond.

1407—1409 Copper dinner services, as above.—Manufactured by Mahmoud, Castamony.

1410 Brass mangal, or brasier. — Manufactured by ——, Constantinople, exhibitor.

1411 Gong, composition; 1412, 1416, 1417, 1420 Cymbals. — Avedis, Constantinople, manufacturer and exhibitor.

1421 Silk and silver thread sash.—Manufactured at Homs, Damascus.

1422 Woollen and silk figured scarfs; 1423, 1427 Printed muslin and calico for dresses and furniture; 1428 Printed calico handkerchiefs; 1429, 1430 Printed calico for furniture and dresses.—Manufactured at the Imperial Factory of Zeitoun Bournou, Constantinople.

1431—1440 Chaplets, or Tesbihs, in fish-teeth, cocoa, coral, amber, &c.—Manufactured by Emin Aga, Ouzoun Tcharshi, Constantinople.

1441—1447 Pipe mouth-pieces, or "Imanies," in amber.—Manufactured by Naim Effendi, Constantinople, exhibitor.

1448—1453 Glass porringers, with saucers and covers.—Manufactured at the Imperial Glass House of Indgir-keny, Constantinople.

1454—1466 China porringers, with saucers and covers; 1467, 1468 China flower-vases; 1469, 1470 China flower-pots and saucers; 1471 China fruit-basket; 1472 China letter-holder; 1473 China narguilé bowl; 1474 China zarfs and coffee-cups; 1475, 1476 China tea services; 1477—1481 China porringers, with covers and saucers; 1482, 1483 China porringers, with covers; 1488 China soup-bowl, with cover; 1489 China candlestick; 1490, 1491 China flower-vases; 1492 China pine-apple; 1493 China soup-bowl; 1494, 1495 China fruit-plates; 1496, 1497 China preserve-plates. — Manufactured at Fethi Pasha's Pottery of Indgir-keny, Constantinople.

1498 Glass cups; 1499, 1500 Glass porringers and saucers; 1501, 1503 Narguilé glasses and plates; 1504, 1505 Glass jugs; 1506, 1507 Glass Hash-ab, or sherbet bowls, with covers and saucers; 1508 Crystal decanter and glass.—Manufactured at the Imperial Glass House of Indgir-keny, Constantinople.

1509, 1510 China porringers, with covers and saucers; 1511 China salad-plate; 1512 China inkstands, with sand-box; 1513 China flower-vase; 1514 China flower-pot and saucer; 1515 China ewer and cover; 1516 China sherbet bowl; 1517 China soup-bowl, with saucer and cover: 1518 China salad-plates; 1519 China fruit-basket; 1520 China fruit-plate; 1521 China fruit-basket; 1522 China flower-vase; 1523, 1524 China " Souratris." —Manufactured at Fethi Pasha's Pottery of Indgir-keny, Constantinople.

1525 Spoons, combs, &c., turned work and carving in bird's-beak, mother-of-pearl, tortoiseshell, fish-teeth, coral, ivory, wood, &c.—Manufactured by Said Aga, Constantinople, exhibitor.

1526 Chalcedony cups, with saucers; 1527, 1528 Chalcedony cups.—Cut by Yani, of Constantinople.

1529 Chalcedony cups.—Made at Kaissarieh, Tokat.

1530 Meerschaum cup.—Made by Kebabdgioglou, Kutaya.

1531 Chess-men, in bone and ivory.—Made at Constantinople.

1532—1535 Meshlas, or cloaks, gold and silk.—Manufactured at Damascus.

1536 Gun.—Manufactured by Abdurrahman, Bozkir, Koniah.

1537 Gun, Albanian, damascened gilt silver-work.—Manufactured at Ianina.

1538 Gun, inlaid gold and silver work.—Manufactured by Emin, Uskup.

1539 Carabine, carved and inlaid work.—Manufactured by Mustafa, Rabtcha, Uskup.

1540 Carabine, short, carved and inlaid work; 1541 Muttekia, used as a support in a sitting posture, with spring dagger, steel and gold inlaid, and carved wood, Kashak, or Dervish's scratcher.—Made by Ihrami, Rabtcha, Uskup.

1542 Carabine, percussion-lock, turn-screws, mould, &c.—Manufactured by Sinan, Kalkan Delin, Uskup.

1543 Pistols, rifled barrels, silver mountings.—Manufactured by Ihrami, Uskup.

1544 Gun, silver and coral mountings.—Manufactured by Hafiz Feni, Trebizond.

1545 Sabre blade, in iron, from the neighbourhood of Adana.—Manufactured by Kircar, Adana.

1546 Gun, brass mountings.—Manufactured at

1547, 1548 Brass stirrups.—Manufactured by Perezin, Pereshko, Uskup.

1549 Brass coffee-mill.—Manufactured by Mustafa, Uskup.

1550, 1552 Steel scissors, inlaid gold.—Manufactured by Tahir, Uskup.

1553 Knife and ramrod, inlaid work.—Manufactured by Hassan, Beirout.

1554 Silver gun, filigree work.—Made at Beirout.

1555—1580 Spoons and combs, in tortoiseshell, mother-of-pearl, fish-teeth, ivory, wood, coral, &c.—Manufactured by Mehemet Effendi, Constantinople, exhibitor.

1611, 1612 Wax taper.—Manufactured by Balmoumagioglou Nourri Effendi, Constantinople.

1613, 1618 Cloth, woollen.—Manufactured at the Imperial Cloth Factory, Ismid.

1619, 1624 Cloth.—Manufactured at the Imperial Cloth Factory, Eyoub, Constantinople.

1625, 1627 Painted boxes; 1628 Painted drinking cup; 1629 Painted pen-case; 1630 Painted band; 1631 Painted silk reels; 1632 Painted fan.—Made at Adrianople.

1633 Tchevré, or kerchief, embroidered in silk and gold. —Embroidered at Adrianople.

1634 Backgammon board, inlaid work, with a set of draughts.—Made at Constantinople.

1635 Cymbals, with cover.—Kircar, of Psamatia, manufacturer.

1636 Meridian book; 1637 Chart of Archipelago; 1638 Chart of Sea of Marmora; 1639 Chart of Black Sea.—From the pupils of the Naval School, Imperial Arsenal, Constantinople.

1640 Sail-cloth, flax; 1641 Sail-cloth, cotton; 1642 Sail-cloth, flax; 1643 Sail-cloth, cotton, used for trousers; 1644, 1649 Rope and twine.—Manufactured at the Government Arsenal.

1650, 1651 Rope.—Made at Uskup.

1652—1664 Marpitches, or leather tubes for water-pipes, painted and gilt.—Manufactured by Mehemet, Constantinople.

1665 Jessamine pipe-sticks.—Produce of Artakeny, Constantinople; manufactured at Constantinople.

1666 Jessamine pipe-sticks.—Manufactured by Naim Effendi, Ouzoun, Tchershou, Constantinople, exhibitor.

1667, 1668 Ebony pipe-sticks.—Manufactured by Emin Aga, Constantinople.

1669, 1671 Cherry pipe-sticks.—Manufactured by Naim Effendi, Ouzoun, Tchershou, Constantinople, exhibitor.

1672 Ebony pipe-sticks.—Manufactured by Emin Aga, Constantinople.

1673 Varnished white wood pipe-sticks.—Manufactured at Ianina.

1674 Pipe-sticks.—Manufactured at Sivas.

1675 Pipe-sticks.—Manufactured at Damascus: Mr. Wood, Her British Majesty's Consul at Damascus, exhibitor.

1676 Pipe-sticks, wild plum-tree.—Produced and manufactured at Caracariyé, Salonica.

1677 Pipe-sticks, jessamine.—Produced and manufactured at Broosa.

1678 Pipe-sticks, quince-tree.—Manufactured at Lef ké, district of Hoodavendiginar.

1679 Horse-cloth, embroidered in gold.—Embroidered at Constantinople; Sofialioglou, exhibitor.

1680 Model of a minister of state's caïque or boat, five pairs of oars; 1681—1684 Models of passenger and private gentlemen's boats.—Cut by the boatwrights of Constantinople.

1685, 1686 Plated metal candlesticks; 1687, 1688 Plated metal coffee-pots; 1682 Plated metal incense-burner and rose-water vase.—Made by Tombak Zarfdgi, Constantinople.

1690—1703 Morocco and common leather.—Tanned and dressed at the Imperial Tannery, Beicos, Constantinople.

1704 Oil-cloth.—Prepared at the above Tannery.

1709, 1710 Narguilés, or water-pipes, in silver, with amber mouthpieces, leather marpitches, and red morocco cases.—Made by Avedik, Constantinople.

1712, 1713 Lanterns, brass tops and bottoms.—Made by Kircor, Constantinople; Hadgi Osman Aga, Constantinople, exhibitor.

1715 Copper sheathing for men-of-war.—Manufactured at the Imperial Arsenal.

1716 Saddle-cloth, white silver embroidery.—Embroidered at Constantinople.

1717, 1718 Saddle-cloths, gold embroidery.—Embroidered by Sofialioglou, Constantinople.

1719 Belt for arms, with shot and powder boxes.—Manufactured by Sadik Aga, head of the corporation of saddlers, Constantinople.

1720 Scarlet cloak, embroidered in gold.—Embroidered at Constantinople.

1721 Trunk in cypress-wood, painted and ornamented with brass.—Made at Constantinople.

1722 Turkish saddle, bridle, pistol-holsters, and saddle-cloth; velvet and cloth embroidered in gold.—Embroidered and made by Sadik Aga, head of the corporation of saddlers, Constantinople.

1723 Mataras, or leather water-bottles, embroidered in gold.—Manufactured by Sadik Aga, Constantinople.

1724 Red cloth and grass baskets.—Manufactured by Aziz Aga, Constantinople.

1725 Brass trumpet.—Manufactured by Aly Tehaoush, Constantinople.

1726 Tambouri, a kind of fiddle.—Manufactured by TAMBOURDGI CARABET, Constantinople.

1727, 1728 Tambourines, ivory, mosaic, and carved work.—Manufactured by TOUFEN ALI, Scutari, Constantinople.

1729 Brass mangal, or brasier.—Manufactured by MARDIROS TOMBAKDGI, Constantinople, exhibitor.

[A very large mangal (a sort of portable stove), of fine brass, and very superior workmanship. This costly piece of braziery is beaten out of a single sheet of brass: it stands about 3 feet 6 inches in height. It exhibits a species of patient industry not often met with in other countries.

There is another mangal of beaten copper, but less remarkable in respect of the difficulties surmounted in its production.]

1730 Copper mangal, or brasier.—Manufactured by CHRISTO, Constantinople.

1731 Brass candlesticks; 1732, 1733 Brass cocks for fountains; 1734 Gilt brass cocks for fountains; 1735 Brass cock for fountains; 1736, 1737 Brass Abdest jugs and basins.—Manufactured by HADGI IBRAHIM AGA, Constantinople, exhibitor:—

1738—1741 Earthen cans, painted and gilt.—Manufactured at the potteries of the Dardanelles.

1742 Gut-string for beating cotton.—Manufactured by IZZET, Constantinople.

1743 Tensouh, or musk paste; 1744, 1745 Kouderma, or Seraglio pastiles.—Manufactured by HADGI SHAKIR EFFENDI, Constantinople.

1746 Silver filigree zarfs, or coffee-cup stands.—Manufactured at Uskup.

1747 Silk sashes.—Manufactured at Damascus.

1748 Daggers; 1749 Gun, inlaid steel.—Manufactured at Constantinople; SAID AGA, exhibitor.

1750, 1751 Rugs.—Manufactured at Ghiordes, district of Aïdin.

1752 Rugs.—Manufactured at Koulah, district of Hoodavendigniar.

1753 Rugs, long-haired sheep's wool; 1754 Rugs, long-haired goats' wool.—Manufactured at Islimia, in Roumelia.

1755—1760 Carpeting.—Manufactured at Ghiardes, district of Aïdin.

1761—1767 Carpeting.—Manufactured at Koulah, district of Hoodavendigniar.

1768 Carpeting.—Manufactured at Ghiordes, district of Aïdin.

1769 Carpeting.—Manufactured at Kouleh, district of Hoodavendiginar.

1770, 1771 Carpeting.—Manufactured at Ghiordes, district of Aidin.

1772—1775 Carpeting.—Manufactured at Koulah, district of Hoodavendigniar.

1776, 1777 Carpets.—Manufactured at Oushak.

1778 Cotton, silk, and gold damask, for chair-covers.—Manufactured by YURGHI, Selimieh, Scutari, Constantinople.

1779, 1780 Cotton and silk ground velvet flowered furniture stuff; 1781 Silver and cotton ground velvet flowered furniture stuff; 1782 Gold and cotton ground velvet flowered furniture stuff: 1783 Silk and cotton flowered furniture stuff.—Manufactured by IBRAHIM AGA, Selimieh, Scutari, Constantinople.

1784 Cotton twist.—Manufactured at Smyrna.

1785 Cotton twist.—Manufactured at Shehri, Aïdin, or Smyrna.

1786 Cotton twist.—Manufactured at Bozdavan, Aïdin, or Smyrna.

1787 Cotton twist.—Manufactured at Menteshé, Aïdin, or Smyrna.

1788 Cotton twist.—Manufactured at Trebizond, Aïdin, or Smyrna.

1789 Towel.—Manufactured at Trebizond.

1790 Cotton cloth, called Astar.—Manufactured at Cara-Hissar, Trebizond.

1791 Kerchief, or shawl, used for turbans.—Manufactured by SULEIMAN EFFENDI, Trebizond.

1792 Cotton cloth.—Manufactured at Eudemisk, Aïdin.

1793 Tarred rope.—Manufactured at the Imperial Arsenal, Constantinople.

1794 Sledge.—Made at the School of Arts of Jassy, Moldavia.

1795 Kours, Seraglio pastiles.—Manufactured by SHAKIR EFFENDI, Constantinople.

1796 Kours, Seraglio pastiles, first quality.—Made in the Seraglio.

1797, 1799 Tensouf, or musk-paste medallions, purses, and necklaces; 1800, 1802 Amber tesbihs, or chaplets in paste, composed of different perfumes.—Manufactured by SHAKIR EFFENDI, Constantinople.

1803—1822 Silver and gilt silver thread.—Manufactured at Simkesh-Han, Constantinople.

1824 Sweetmeat, called Rahatlocoum.—Made at Constantinople; SAID AGA, importer and exhibitor.

Made in Moldavia.

1848 Sheep-skin sportsman's jacket.
1849 Sheep-skin sportman's jacket and trousers.
1850 Sheep-skin vest, man's.
1851 Sheep-skin vest, woman's.
1852 Peasant's cap.
1853 Summer vests, worn by the mountaineers.
1854 Shepherd's cloak and cap.
1855—1859 Leather, morocco and common.
1860 Woollen cover.

1861—1866 Carpets, made from the wool and dyed with vegetable colours of the country.

1867 Cask, made by Ampel, a cooper of Jassy, Moldavia; PRINCE OF MOLDAVIA, exhibitor.

Manufactured at Tricala.

1869 Cotton cloth for the bath.
1870 Cotton stuff, called Aladgia.
1871 Woollen cloth for cloaks.
1872 Furniture stuff, cotton and silk.
1873 Cotton sail-cloth.
1874, 1875 Cotton cloth for dresses.
1876 Rug.
1877—1879 Cotton yarn, white and dyed red.
1880—1882 Cloths for the bath.
1883 Red cotton cloth.
1884—1887 Silk thread and cord.
1890 Silk and cotton stuff, green borders.
1891—1901 Cotton stuffs for bath cloths, dresses, &c.
1902 Dyed silk thread.
1903 Silk neckerchief.
1905 Silk saddle, girth, and bridle.
1906 Silk sheronta, or kerchief, for turban.
1907—1909 Musquito nets.

Manufactured at Erzeroum.

1920 Brass mangal, or brasier, with key for undoing it.
1921—1923 Brass candlesticks.
1924 Water-cup, brass.
1925 Water-cup, brass, used in the bath.
1926 Brass mortar and pestle.
1927 Brass water-cup.

1928, 1929 Imames, or pipe mouth-pieces, in amber, set with diamonds.—Manufactured at Constantinople; HADGI MIHRAN, Duzoglou, exhibitor.

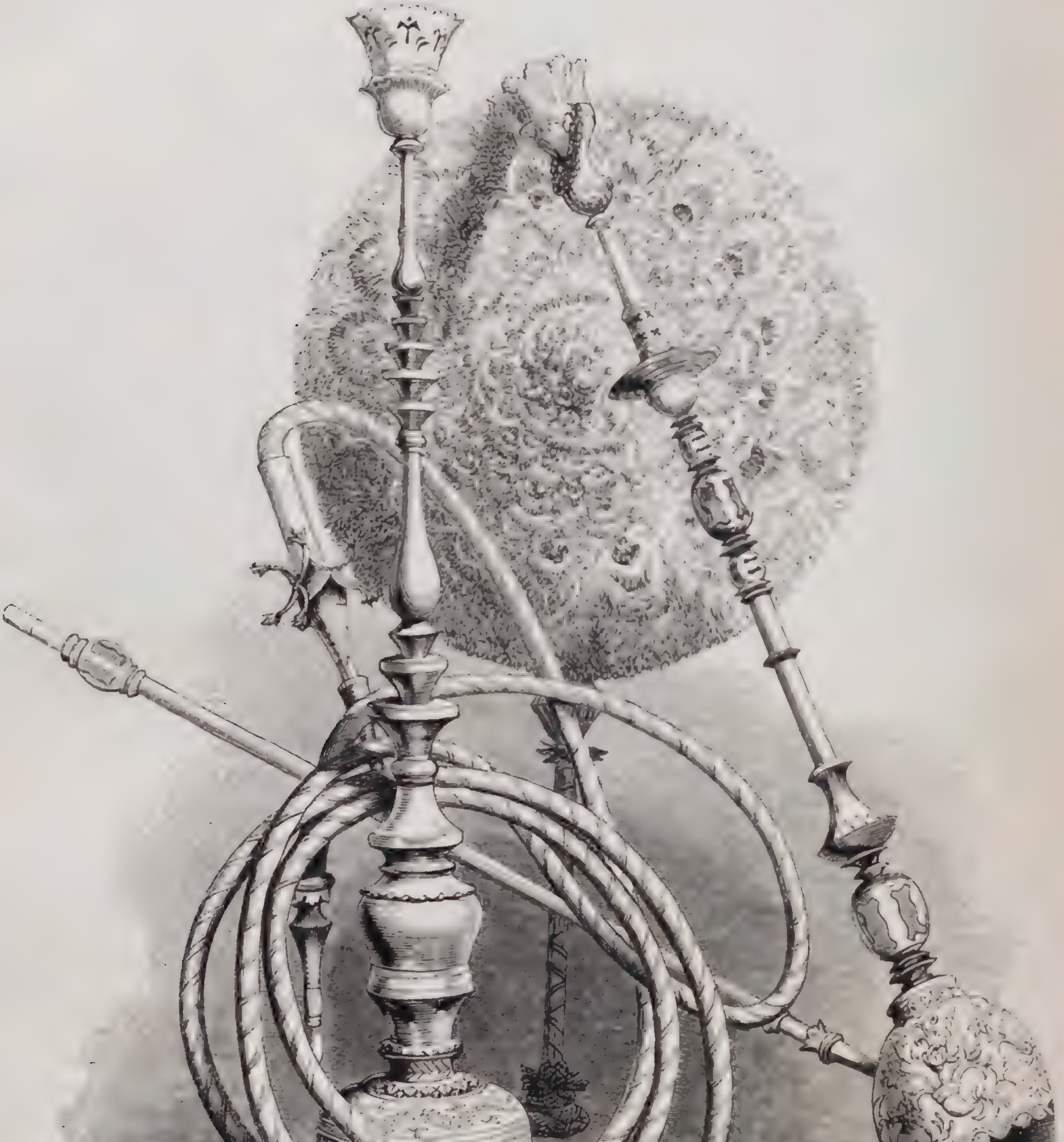
[These mouth-pieces are fine specimens of pale and of high-coloured amber, and are finely mounted.]

1930 Coins and medals stamped during the reign of His Majesty Abdul-Medgid Khan.

1931 Cherry pipe-sticks.—Growth and manufacture of Constantinople; SAID AGA, exhibitor.

Manufactured and made in Moldavia.

1932—1935 Felt, white and black.
1936, 1937 Common woollen cloth, called Shayak.



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1938, 1939 Common cloth, called Aba.

1940—1942 Common cloth, called Shayak, made with zegay wool.

1943 Woollen stuff, called Mouhaïr.

1944 Common woollen cloth, called Shayak.

1945 Shawl, zegay wool.

1946 Shawl, zegay wool and silk.

1947, 1948 Woollen veils, worn by nuns.

1949 Black silk crape veil.

1950 Peasant's apron, cotton and wool.

1951 Stuff for aprons.

1952 Apron.

1953 Flannel.

1954 Sash, cotton and wool.

1955 Worsted stockings.

1956 Linen cloth.

1957 Cloth, made from hemp.

1958 Cotton cloth.

1959 Cotton and linen cloth.

1960 Linen cloth.

1961 Woollen gauze.

1962 Cotton cloth.

1963 Table-cover.

1964 Towels, cotton.

1965 Linen drill.

1966 Musquito netting.

1967, 1968 Silk and cotton gauze shirts and pair of drawers.

1969 Silk gauze child's shirt.

1970 Silk and cotton gauze bed sheets.

1971 Silk gauze peasants' veils.

1972 Zegay woollen thread.

1973 Linen yarn, or dressed lint.

1977 Worsted gloves.

1978 Stéarique, or spermaceti candles.

1979 Soap.

1980 Window-glass. — Manufactured at the Glass-house of Groseshli.

1981 Sportsman's belt, with pouches, &c.

1982 Small pitchers in wood of the yew-tree.—Made by the monks of the convent of Mantché.

1983 Alabaster vases. — Wrought from alabaster of the Carpathian Mountains.

1984 Small barrel, composed of 1851 pieces of wood.—Made by Hampel, cooper, Jassy.

1985 Chain of five fathoms, cut from a single plank of wood.—School of Arts, Jassy.

1986 Medallion, silver.—Engraved by Yanco, Jassy.

1987—1990 Peacock-feather fans.

Specimens of printing and lithography:—

1991 Chart of the Danubian Principalities, Jassy.

1992 Lithograph representing a subject of Moldavian history, drawn by Panagitano, Moldavia.

1993 Atlas in the Moldavian language.

1994 Scriptures Rerum Moldavicarum, edidit M. Kazalniciam.

1995 Messages du Prince de Moldavie à l'Assemblée Générale.—Printed at the office of the Abeille.

1996 Nations statisques sur la Moldavie par la Prince Stourdza.—Printed at the Car Roumain

1997 Description of Moldavia by the Prince Cantimir.—French and Roman printing-office.

1998 Calendar of the Good Farmer, by Ionereo.—Printed at the press of the Feuille Communale.

3350, 3351 Embroidered tobacco-bags, stuff called Lahore; 3352, 3355 Stuff, called Shalaki, embroidered in gold.—Embroidered by Hadgi Mehal, Constantinople.

3356 Stuff, called Shalaki, embroidered in gold. — Embroidered by Rifaat Effendi, Constantinople, exhibitor.

3357 Stuff, called Shalaki, embroidered in gold.—Embroidered by Hadgi Mihal, Constantinople.

3359—3361 Albanian belt and bridles; 3362, 3364 Woollen socks; 3365 Woollen cloth, called Shayak.—Manufactured at Uskup.

3366—3368 Silver narguilés, or water-pipes.—Manufactured by Hekunoglou, Constantinople.

3369 Amber pipe mouthpieces and cigar-holders.—Manufactured at Constantinople; Said Aga, exhibitor.

3370 Snuff-box, enamelled silver.—Manufactured by Vasili, Tricala.

3371 Drinking-cup, enamelled silver. — Manufactured by Constantin, Tricala.

3372 Pipe-sticks and wood for mouthpieces, varnished. — Manufactured at Constantinople, Said Aga exhibitor.

3373 Drawings and lithographs, from the pupils of the Imperial Schools and Colleges, Constantinople.

3374 Wrought-iron cannons.—Manufactured at Erzeroum.

3375 Boat, two pair of oars, accompanied by three boatmen.—Made by the boat-wrights of Constantinople.

3376, 3377 Pottery from the Dardanelles, viz. two soup bowls and covers and basin.

Specimens of lithography and printing from Constantinople, viz.:—

3378 Imperial music, by Nedgib Bey.

3379 Tables, in Turkish, Greek, and Armenian languages, demonstrating the growth of the silkworm, by Kamil Bogha and Dardana.

3380 Yanzkedid, a clock, or time-piece, on a new principle.—Invented and manufactured by a self-taught Dervish, Ahmed Eflaké Dudè, of Constantinople.

[This object is interesting as the result of patient reflectiveness and constructive skill on the part of a member of a class of Mussulman devotees, among whom similar instances of mechanical proficiency are extremely rare.]

GREECE

Commissioner in London, P. Ralli, Esq., *President, and* Mr. P. D. Scaramanga, *Secretary*, 25 *Finsbury Circus;*
Agent, Mr. C. J. Major, 21 *Billiter Street.*

Of Greek exhibitors, inclusive of the Greek Government, there are about thirty-five in number. Of these only nine appear with contributions in other than the first four Classes. About twenty-six, consequently, exhibit specimens of the raw materials and produce of their native country. Many circumstances combine to render these peculiarly interesting. The present condition of this once-renowned country, and its natural capabilities, form a subject of deep attention to many. The articles exhibited indicate the existence of various sources of wealth to this country, which appear only to await a vigorous application of the means of industrial progress to become productive. The vegetable products shown include valonia, madder, currants (the Corinthian grape), raisins, tobacco, &c. There can be little question that either of these articles, if properly cultivated, and on a sufficiently extensive scale, would prove more fertile sources of national revenue than hitherto. A jar of Hymettian honey has classical associations linked with it. The minerals exhibited are, or may readily become, if they can be worked to advantage, and transported at a moderate freight, valuable to commerce. The ornamental marbles, white and coloured, are well represented, and appear as the raw material wrought by ancient art into those monuments of skill which have formed the admiration of every time and people. The cultivation of the silkworm is extending in Greece, and specimens of raw and manufactured silk are sent for exhibition. Specimens of gold embroidery, and some sculptures, are likewise shown.
—R. E.

North Side, I. J. 42.

1 Zaphirakis, Zaphiris, *Gythium, Laconia*—Producer.

Valonia. This article consists of the dried cups of the *Quercus ægilops*, and is used for tanning.

2 Sophianos, Andreas, *Zea (Island)*—Producer.

Valonia. This article is produced in different parts of Greece; the best is that of Zea, and the next of Laconia. Annual produce about 140,000 cwts.

[Valonia is used for the purposes of tanning and dyeing. The tree which produces valonia is indigenous to many parts of Greece. It arrives at maturity from August to October. The inhabitants collect it either by shaking the trees or when it falls naturally; that which falls first is called camata, and is in the greatest estimation. There is a large consumption of this product in the tanning establishments of Greece. About 130,000 to 140,000 cwts. are annually exported to Trieste and other parts of the Adriatic, Sicily, the Roman States, Tuscany, Sardinia, and England, in addition to that used in Greece. The principal ports from which it is exported, are Gythion of Laconia, Missolonghi, Patras, and Zea. The best quality is produced in the island of Zea, and the next best in Gythion, but in considerably larger quantities. It is supplied to the trade during the months of October and November.]

3 Malandrinus, Andreas, *Athens*—Producer.

Four pounds of madder-root, for dye. This plant is grown in Attica, Eubœa, Sciros, &c.; the best quality is that of Eubœa. Annual produce, in all Greece, from 4,000 to 5,000 cwts., but it increases yearly.

[Madder-root is used as a red dye: the inhabitants cultivate it for its root, and its cultivation in Greece dates from a very early period, when, according to Theophrastus, it was found in a wild state. During the struggle with Turkey, the growth of this root was neglected, but after the restoration of Greece it was again cultivated in many parts, where it succeeds, as the land and climate are very favourable to it, and its dyeing properties are found to be superior to that grown in many other parts of Europe. The inhabitants sow it in February in beds of light and thin soils: in order to facilitate the development of the root, they surround it with mould twice, and in some parts three times a-year, as by this process the root increases. It is cultivated by the implements commonly used in Greece, except in Argolis, where some proprietors make use of new and improved implements introduced by the Agricultural School. The root is dug up in the month of September, in the third or fourth year after sowing, during which time the seed is collected for sale: it often happens, however, that from the lowness of the price, or other circumstances, it is left underground for a longer period, during which time it increases, and so reimburses the proprietors for the delay. One stremma of land gives about 600 oques of fresh root, or about 200 oques of dry. There is a large consumption of this root in the kingdom for the purposes of dyeing, and 4,000 to 5,000 cwt. are annually exported to Trieste, Marseilles, and Turkey in Europe. The principal places in which it is cultivated are Eubœa, Elis, and Attica, and the ports from which it is exported are those of Chalcis, the Piræus, and Patras.]

4 PHILLIPPOS, GEORGE, *Eubœa*—Producer.

Madder-root for dye.

[The name of the plant which yields madder is botanically *Rubia tinctorum.* It belongs to the natural family of stellate plants. The munjeet of India, and other important dyes, are yielded by this family. The immense consumption of madder in the calico-printing trade almost exceeds belief.—R. E.]

5 PETROPOULOS, CONSTANTINE, *Tripolitza, Arcadia*—Producer.

Box of Kermes, used as a red dye, particularly for fezzes (red caps); gathered in different parts of Greece: the best is that of Arcadia.

[Kermes is a small insect, *Coccus ilicis*, allied to the cochineal insect, and found feeding on the leaves of a species of oak common in the Levant, *Quercus ilex.*—R. E.]

[It is used as a red dye, particularly in the manufacture of the fez in Athens, and was known to the ancients, according to Dioscorides, who says—" There is a dyeing grain produced among the oaks resembling a small snail, which is collected by women, and is called coccos." The kind of oak from which it is obtained grows in its natural state in many of the stony lands of Greece; it is much smaller than the other oaks, bushy, with small red leaves. These "red grains" are gathered by the inhabitants with the hand, and, after being dried, are sold to the trade. When the oaks are burned, they produce more of these grains: about 30,000 to 40,000 lbs. are exported to Leghorn and Tunis. The principal ports at which it is shipped are those of Gythion and Nauplia.]

6 LONDOS, ANDREAS, *Patras*—Producer.

A box containing currants, the stock of which was not slit. This fruit is cultivated in different parts of Greece; the most esteemed is that of Achaïa. It is exported principally to England, to the annual amount of about 40,000,000 lbs., which increases yearly.

[The cultivation of the currant is very ancient in Greece. This plant was at first grown only on the Corinthian coast, from which it obtains its name. The prejudice among the inhabitants, that this plant did not succeed in any other part, and the dangers to which it is especially subject until gathered, deterred them from cultivating it in any of the other parts of Greece; but after the Revolution, various experiments showing that it succeeded elsewhere, caused it to be more generally cultivated, and it now increases every year. It is usually planted in rich moist soils, or such as can be watered. During the months of December and January, it is planted in the driest places, and in March in damp grounds. It is planted thinly in rows, at the distance of 8 feet apart, so as to leave sufficient space for the development and spreading of the vines on the poles, so that one stremma of 1,000 square yards does not contain more than 300 vines. The value of a stremma is from 150 to 300 drachmas. The expense of planting and cultivation until the sixth year, when it begins to cover the annual charges, amounts from 200 to 250 drachmas. At the fourth year the plant commences to yield a small profit, and at the sixth covers the expenses of cultivation. After the seventh year the profits increase considerably, and each stremma will then bear 500 lbs. of fruit; it progresses until the twelfth year, when it reaches its highest degree of development and production; the best quality of land will then yield 1,000 lbs. of fruit per stremma. Some growers, wishing to obtain a more speedy and abundant harvest, have lately adopted the bad custom used in some of the Ionian Islands, of cutting away the bark round the trunk in the shape of a ring, about the third or fourth year of its growth, during the rising of the sap. By these means the sap being confined to the branches, the produce is more abundant, being often more than double the usual crop, viz.: one stremma giving 1,400 lbs. of fruit, but its quality is very inferior, as these currants have neither the sweetness nor other good qualities of those produced on vines that have not been cut; they are distinguished by the size of the berries, which, containing imperfect liquid juice, are very large, and, when dried, will not keep long without turning sour. Besides the injury which this method causes to the fruit, it also considerably shortens the life of the plant, as, from the confinement of the sap, the branches are over nourished, and the root gradually weakened, which causes it soon to die. The government has taken strong measures against this injurious system, and it is to be hoped that for this reason, and also from the bad reception such fruit has met with from the trade, it will by degrees be discontinued.

The gathering of the fruit begins from the 25th of July in dry places, but later in damp soils: in the former it is collected at two or three different times, as the grapes do not all ripen at once, and in the latter as often as four times. The necessity for hastening the gathering and drying of the fruit before the rains commence, causes the inhabitants to use great expedition, in order to avoid the danger to which it is exposed while lying on the meadows; so that in most places the gathering does not occupy more than 20 days.

The quantity of currants produced in the whole kingdom amounts to about 40,000,000 lbs; Patras and Corinth producing 10,000 lbs. each.

Before the Greek Revolution, the fruit produced was only from 10,000,000 to 15,000,000 lbs. In the cultivation of this plant the inhabitants generally do not use new methods and implements, but there is, however, a great inclination to do so on account of the high price of labour, and in some places they have already begun to use the plough, lately introduced by the Agricultural School, drawn by one animal, for the cultivation of the vine, and also some new machines for cleansing the fruit.

Of the above-mentioned quantity, about 22,000,000 lbs. are exported to England, and the remainder to Germany.]

7 INGLESSIS, NICOLAS, *Santorin* (*Island*)—Producer.

Raisins, light coloured, dipped in hot water and dried.
Raisins simply dried.

[Raisins have been cultivated for some years in this island, and their cultivation increases daily. The considerable quantity of wines exported from the island of Thera to Russia, has induced the inhabitants to prepare and join to that trade the exportation of raisins, which are remarkable for their extreme sweetness, and the facility with which they can be preserved, and on account of the abundance of saccharine matter contained in them.]

8 PEROTIS, GEORGE, *Messenia*—Producer.

Five strings of figs. Figs in box.

The Messenian figs are so cheap, that they are a principal article of the food of the population; and are exported in large quantities to different parts of the Mediterranean and Black Sea. Annual produce, about 70,000 cwts.

[In almost every part of Greece the fig is cultivated with success, and a large quantity is annually produced, some of which are historical for their rarity and choice description. The inhabitants exhibit great skill in their cultivation, and understand the best method of planting and increasing them. The principal places in which the cultivation of the fig-tree has been carried on to a considerable extent, are Messina, and particularly Calamus.

The inhabitants were deprived of this fruit for some years, owing to the destruction of the fig and other trees during the Greek Revolution by the Arabs. But the persevering efforts of the inhabitants have surmounted all difficulties, and have not only reproduced the quantity destroyed by the Arabs by new shoots from the roots, but in several places have extended the cultivation so much, that the number of trees at the present time is double that of the previous period. The production has increased one-third. This kind of fig is very cheap, and the lower classes use them.

In addition to the quantity consumed in Greece, more than 70,000 cwt. are annually exported from the port of Calamus to Austria *viâ* Trieste, and to Turkey and Russia *viâ* the Black Sea.]

9 ATHANASIOU, DEMETRIUS, *Lamia*—Producer.

Tobacco. This plant is cultivated in almost all parts of Greece, principally in Phthiotis, Bœotia, and Argolis. The best kind is usually smoked by the inhabitants; but large quantities are exported to France, for the "Regie des Tabacs" of the inferior quality on account of its cheapness.

[*Nicotiana tabacum* is the botanical name of tobacco. The plant belongs to the natural order *Solanaceæ*.—R. E.]

10 LAPAS, DEMETRIUS, *Livadia*—Producer.

Sample of tobacco.

11 CACOULIDIS, JOHN, *Ligouriou, Argolis*—Producer.

Sample of tobacco.

[The cultivation of this plant has become very extensive in several parts of Greece, in consequence of the general use of tobacco and snuff in the kingdom. It is sown in October and November in nurseries, and in February it is transplanted to well-ploughed ground. The weeding and other processes are performed by hand labour. The leaf harvest begins in August, when the gathered leaves are exposed to dry in the sun, and are then packed in bales. The average produce of a stremma of land is 80 oques. The best quality is from Sourpi, next to which ranks that of Argotides and Lebadia, which are the principal places of its production. Beside the quantity used in the kingdom, there is an annual export of more than 7,000 cwt. to France, where the lowest qualities are sent, as the price obtained there is only 40 to 50 cents per oque. Tobacco is also exported from Syra, Pyrato, and Nauplia to Trieste and other places.]

12 PAVLIDES, BELISARIUS, *Gulf of Nauplia*—Producer.

Sponges. Annual produce about 130,000 lbs.

[Nearly all the coasts of Greece abound with this marine production, and the inhabitants obtain them by diving and by harpooning: the better method is by diving. A great part of those obtained are of the best quality, and very nearly resemble the good Syrian sponge. There are annually exported from the ports of Nauplia, Patras, and Syria, more than 130,000 English pounds.]

13 TSITZIMBAKOS, ANGELOS, *Athens*—Producer.

A jar of honey of Mount Hymettus. Honey in the comb. The most esteemed honey produced in Greece is from Carysto and Hymettus. It is exported to all parts in large quantities.

[Honey, the produce of the industry of *Apis mellifica*, varies in flavour with the district from which it is collected. The honey of Mount Hymettus and Carysto, celebrated through all antiquity, has been said to owe its peculiar and highly-esteemed flavour to the odoriferous vegetation of the surrounding country.—R. E.]

14 BISHOP OF EUBŒA, NEOPHYTOS, *Carysto, Eubœa*—Producer.

A jar of honey. The honey of Carysto is called rhodomeli, because it has the flavour of roses.

[The feeding of bees, so ancient in Greece, is now maintained and advanced. The sweet and aromatic nature of her plants gives to the honey produced peculiar qualities, which have been celebrated by her poets. The honey of Hymettus has always been the most distinguished, according to the testimony of Theophrastus and Dioscorides, who say, "The best honey is that of Attica, and of that the most excellent is from Hymettus, and the honey of Karysto, which is called 'rose-honey;' the latter kind is produced only at Karysto, and it takes its odour from the wild rose, which furnishes the food of the bees." But this sort of honey is not produced every year, as it is influenced by the growth of the wild rose; in consequence of which, during the last two years, the honey from which the sample sent is taken is not of the best quality.

Honey is gathered at two different seasons, viz., May and June, and August; the first produced is the best. The annual quantity exported from the ports of the Piræus, Gythion, Calamus, and Chalcidia, exceeds 70,000 to 100,000 oques.]

THE GREEK GOVERNMENT.

Raw Materials.

15 *Milo.*—Two pieces of steatite or soapstone (French chalk). This substance is used for taking out spots of oil, grease, &c., from cloth, silks, and other fabrics.

[Steatite is a silicate of magnesia resembling talc in composition.

Soap-earth of a blue colour is used to extract spots of oil and grease from manufactured goods and furniture, for which purpose it is employed by the natives. It is found in abundance in the island of Kimaulo, whence the sample sent was taken, but it is also met with in other parts of Greece. It is not exported, as its qualities are not yet known. The soap-earth mine is of great extent, and belongs to the Government.]

16 Box of terra cimolia (Cimolite). It is a light argillaceous earth, soft to the touch, and was known to the ancients who used it for cleaning cloth and bleaching linen.

[Cimolite, or cymolite, is a hydrous silicate of alumina, containing silica, 63; alumina, 23; water, 13; oxide of iron, 1·25 (Klaproth). It occurs in volcanic districts, and is considered to be a variety of halloysite.—D. T. A.]

Kimaulia-earth is of very fine grain, and was known to the ancients, according to the testimony of Dioscorides, who says—"Kimaulia is either white or purple; the best is that in which a sort of fatness is perceptible, and which is cold to the touch. The ancients used it to cleanse and wash their manufactures." It is found in the island of Milo, at the place called Fourkovoum, and at the opposite promontory, called Babi. There is no exportation of it, for the same reason as applies to soap-earth: it is the property of the government.

17 Box of iron ore (Germ. röthel). It is soft, and has a beautiful light-red colour, and is used as a pigment. It is the best in Greece.

[This red earth is used in dyeing, being very fine, and of the best quality. It is a produce of Milo, but is not exported.]

18 Three pieces of grinding-stone, or mill-stone. This stone is light and hard; it is a combination of pure quartz, with a small portion of clay and potash, in the proportion of 1 per cent. of the two latter. The mill-stones made from it are divided into six classes. The first or largest averaging 19 inches in diameter, and 11 inches in breadth or depth.

[Mill-stones are light and very strong; they are composed of pure quartz, a very small quantity of clay, and potash to about 1 per cent. The mill-stones are found in all the eastern coasts of the island of Milo; but they are at present only obtained from the quarry of Reuma, which yields the finest qualities. These stones are much used in every part of the kingdom for flour-mills, besides which more than 20,000 are annually exported to Trieste and Turkey. The working them is carried on by the government through superintendents.]

19 Piece of native sulphur. Sulphur is found in large quantities in the island of Milo; it is not much exported, being almost unknown. In different parts of this island solfataras are found, and close to them sulphur mixed with an arenaceous stone and alum.

[Sulphur is found in considerable quantities in the island of Milo. At different places in the island there are sulphureous springs, and near to them sulphur mixed with a sandy petrifaction of alum is found. The sample sent is a piece of pure sulphur taken from a grotto in the island. The sulphur of Minos was known and highly valued by the ancients. The best is crude, sparkling, transparent, and free from stones. The greater part is produced at Milo.]

20 *Naxos.*—Box of Emery. It is used in cutting, grinding, and polishing, and is abundantly found in many parts of the island: it is in small particles and hard, of a darkish-blue colour, nearly black, occurs in masses and is very heavy: according to Mr. Tennant's analysis it contains—clay, 86; quartz, 4; oxide iron, 5; dirt, 5. Annual export about 30,000 cwts.

[The emery of Naxos is of the finest kind, and used in various ways in the arts in cutting, grinding, and polishing. It consists of nearly pure alumina in a semi-crystalline state (corundum). There are several different qualities, the best kinds have a blue tint. The best is that of Koxaki. It is used in powder to work and polish the hardest precious stones and metals. The ancients made use of it for the first purpose, as Dioscorides says, "Emery is a stone with which the ring-makers polish their jewels." Its grain is fine, of a dark red colour tending to black. It is compact, uniform, and of great hardness and weight. The quarry is national property, over which there is a superintendent, who, at the time of the hewing, hires the necessary workmen for cutting and transporting it to the shore. The mines are worked by means of fire; the rock, after being heated, breaks when cold.

The quantity fixed for exportation is sold by public auction, and every year more than 30,000 cwt. are exported to England and other countries. The price last paid was from 12 to 16 drachmas per cwt.]

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21 BOUDOURIS, BASILIO, *Limni, Eubœa*—Proprietor.

Carbonate of magnesia. This mineral is very white, and pure of its kind; it contains 44 per cent. magnesia, 46 per cent. carbonic acid, &c., is used for the manufacture of pure magnesia and Epsom salts; as it resists the heat of fire, it is useful in making bricks for the construction of furnaces. At present the export is about 40,000 cwt.

[Impure carbonate of magnesia, occurs native, in considerable masses, in the form of magnesite, constituting a range of low hills in Hindostan. It is also abundant in Greece. It is found in Eubœa, especially in the district of Kironile, where there are entire hills of it. The mines are worked, some belonging to public and some to private gentlemen. It is extracted in the villages of Limin, Kotsikia, and Matondi, &c., that of the last-named village is of the best quality. From the neighbouring ports more than 40,000 cwt. are annually exported to Smyrna and England.

The pharmacist prepares the carbonate of magnesia in a pure form by precipitation from the sulphate. Heavy carbonate of magnesia is obtained in different ways. The most effectual way is to employ strong solutions of the precipitant carbonate of soda and of the sulphate, and to precipitate the carbonate hot. Calcined magnesia is a product generally of heating the carbonate in covered crucibles.—R. E.]

THE GREEK GOVERNMENT.

Raw Materials.

22 *Santorin.*—Box of puzzolana. This material consists of volcanic ash; it is ash-coloured, and has the same properties as the Italian puzzolana; it is much used for building aqueducts, &c., in Greece, Turkey, and Trieste.

[This earth is of a volcanic nature, and its colour is grey: it is found in abundance in the island of Thera, from which it takes its name, and also in the neighbouring small islands. It is of the best quality, and has the same properties as the Italian pozzolana; mixed with lime, it becomes hard and solid, and sinks in water. In consequence of which property it is much used, in the kingdom, in hydraulic works, such as the building of ports, aqueducts, bridges, terraces, &c. A considerable quantity is exported yearly from the port of Thera to Trieste and Turkey.]

23 *Thebes.*—Box of meerschaum (Fr. *écume de mer*). There are two qualities; the inferior quality is found in pieces of the size of a child's head, and the better sort in smaller pieces. Some years ago diggings were undertaken, but not to any great extent.

[Meerschaum or magnesite is an earthy and silicious carbonate of magnesia resembling chalk, but not effervescing with acids. It gives off water on calcination. The best kinds are obtained from the Crimea and near Konié in Natolia. On being worked, it takes a beautiful polish, and is found in the hills near Thebes. A few years ago the excavation began, but not having proceeded deeply into the ground, the pieces are as yet not large. It is used for making pipe-bowls and other ornaments. There is no exportation of it, as it is not yet sufficiently known.—D. T. A.]

24 *Messenia.*—Piece of lithographic stone. Pieces are found as large as two French meters (6 ft. 6 in.) cube. As, however, the excavations have hitherto been only superficial, the surface of the specimens raised contains flaws.

[Lithographic stones are found in many parts of Greece; the best quality is that of Constantine in Messina, whence the sample sent has been extracted. Pieces can be procured as large as two square metres, and proportionately thick; but as the digging has not been carried on very deeply, veins are found on the surface of the large pieces. There are also some of a lighter colour than the samples.]

25 MALAKATESI, JAMES, *Tinos*—Proprietor.

Two pieces of marble; one white; one blackish. Exported in large quantities.

[The quarries of this island are private property. The marble is extracted in large pieces, and carried into different parts of the kingdom, where they are used for sculptural and architectural purposes. These marbles are exported to Turkey.]

THE GREEK GOVERNMENT.

Raw Materials.

26 *Sciros.*—Piece of white marble. It is found in large quantities.

[White marble of Sciros is also extracted in pretty large pieces. This quarry belongs to the Government.]

27 *Sparta.*—Piece of marble capable of receiving polish. It is beautiful from the variety of its colours.

[This Spartan marble is of the amygdaloidal kind; it can be polished, and is very beautiful. It is found to a great extent near the town of Krokia, distant about four hours from the port of Gythion.]

28 Piece of marble (Fr. *Calcaire silicifère*). The colour is reddish sky-blue, having green spots. It is pretty hard and takes polish, and consists of carbonate of lime mixed with silica.

[This specimen is of a reddish-blue colour with green spots; it is rather hard, and can be polished. It is found at Krokee.]

29 *Areopolis.*—Piece of grey marble from Cape Tenarus. This marble is found near the sea, and is obtained in slabs.

[Ash-grey marble of Sparta. This sort of marble is found to a large extent near the sea, by the Promontory of Tenaros, and can only be extracted in slabs.]

30 *Damaristica, South Maïna.*—A piece of marble with grey spots, having the appearance of white clouds; found in large blocks.

[Ash-grey marble of Sparta, with large spots. This marble is beautiful, on account of its being interspersed with large and small whitish spots, resembling little clouds. It is to be found at Damaristica, a village in the district of Lagia of Gythion.]

31 *Perori.*—Piece of variegated marble; the ground is amethyst, with well-marked yellow veins.

[Amygdaloid marble of Sparta, almond-shaped, spotted, and of a brilliant yellow colour. It is found near the mountains of Sparta.]

32 *Pyrgaro.*—One piece of greyish-coloured marble; found in large blocks.

[This greyish marble of Sparta is of a reed-like appearance. It is principally found in large strata at Damariska, of Lagia of Gythion.]

33 *Nyphi.*—One piece of white marble. It is very white and fine grained, but not so transparent as that of Paros and the Pentelicon.

[White marble of Sparta, found at Nyphi, a village in the district of Lagia, Gythion.]

34 *St. John.*—One piece of marble breccia; a variegated marble, the principal colour of which is violet.

[Various-coloured marbles of Sparta are found in the village of St. John, one hour's ride from Sparta.]

35 One piece of marble, white, with yellow almond spots; found in large blocks.

[White marble, with yellow almond spots, of Sparta, is beautiful on account of its colour. It is found in large beds near the mountains of Sparta.]

36 *St. Elias.*—One piece of greenish marble. It is found in large blocks.

[The water green marble of Sparta is found in large strata of St. Elias of Sparta, in the village of Porgarou, in the district of Lagia of Gythion.]

37 One piece of marble, with different shades of colour and veins; found in large blocks.

[The serpentine marble of Sparta is found at St. John's, distant one hour's ride from Sparta.]

38 *Carysto.*—One piece of cipolino marble (*Marmorum Carystium cippolinum*). It is from the same old quarry which produced the marble of which the columns of Antoninus and Faustina, in Rome, were made. In the Curia Innocenziana, there is a very large column of a single piece of this marble.

[The true *cipolino* is a mixture of talcose schist with white saccharoidal marble.—D. T. A.]

[Marble cipollino of Karystos is found in the old quarry Marmaria, near the village called Styra, or, as Strabo says, "Near there is seen Styra and Marmaria, whence are quarried the columns of Karystos." Situated in this quarry are still to be seen half-worked columns, and from this quarry the large pillars of the temple of Anthony and Fausta in Rome, as also other pillars, of one single piece, lying in the Court of Innocents, were excavated.]

39 *Scutari.*—Three pieces of the marble called rosso-antico, used by the ancients for sculpture and architecture. It is found near the sea. The largest pieces known of this marble, are the fourteen steps in the church of St. Praxede, in Rome, which were intended to be carried to France to ornament the throne of the Emperor Napoleon.

[Antique red marble rossoanticco of Gythion, used by the ancients for sculpture and architecture. It was thought, until lately, the place whence it came was unknown, but which was, however, near the sea, in Skautari, a village in the district of Teftiou. The largest pieces which remain of this kind of marble are the steps above-mentioned, which were to have been taken to France to ornament Napoleon's throne.]

40 CLEANTHES, STAMATIS, *Paros (Island)*—Importer.

Piece of white marble from a very extensive quarry lately opened; the quality of the Naousta marble improves as the quarry is worked.

[The white marble of Naousta, at Paros, quarries of which furnish the ornaments of many historical monuments of antiquity, and were so highly praised by poets and prose writers, are open afresh. They are very extensive. The samples from these quarries sent some years since to Rome were particularly praised by sculptors, and several countries sent orders to Greece for this kind of marble. The excavation is proceeding, and every day the quality found is better. It is worth about 200 drachmas the cubic metre.]

41 Two pieces of marble, called Lichnites by the ancient Greeks. This marble is very transparent and brilliant, very white and fine-grained.

[The Lichnite marble of Paros is very white, transparent, finely granulated, and of a crystalline appearance; of which Strabo says, "The Parian stone is excellent for statuary;" and Pindar says, "We erected a column of Paros stone." The ancient quarries from which the sample has been taken are very deep. The ancients were obliged to make use of a lamp during the excavations, and some think that it derives its name from that circumstance; and some others account for it by the transparent and bright nature of the marble.]

42 Specimen of flesh-coloured marble, lichnites. Highly esteemed by the ancients.

[This flesh-coloured lichnite of Paros is very fine, and exceedingly rare, even among the ancients.]

THE GREEK GOVERNMENT.

Raw Materials.

43 *Crokea.*—One piece of marble, commonly called "Porfido serpentino." It is beautiful and rare; much used by the ancient Greeks; occurs in many hills in Laconia, where an ancient quarry has lately been found.

[Porfido verde antico, improperly called serpentine, is rare. According to Pausanias, it was much used by the ancients. It is found in different hills near Krokee of Gythion, where the ancient quarry was discovered.]

44 One piece of green marble, known under the name of "Porfido verde." The ground of it is pea-green, having small round crystal spots of light green; called by the modern Romans "Porfio di vitelli." Not hitherto exported.

[The green marble of Sparta is of a fine green colour, hard, with bright greenish spots, taking a polish. It was unknown until lately. It is found near Krokee.]

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45 The PRIOR of the MONASTERY, *Pentelicon*—Proprietor.

One piece of white marble. This is the same kind of marble as that of which the Parthenon and other monuments in Athens were built, as well as many statues made; and since Athens became the capital of the new kingdom of Greece, this marble has been used in building many of the public edifices and private houses.

[The quarries of the Penteli, celebrated by the ancients, from which the Parthenon, and many other monuments of Athens were erected, and from which many statues have been made, have been re-opened since Athens has become the capital of the kingdom. This kind of marble is used for ornamenting churches, and other buildings, at Athens, and for other sculptural works.]

THE GREEK GOVERNMENT.

Raw Materials.

46 Piece of green porphyry. It has a beautiful light green colour, with spots of green still lighter. It receives polish, and is used in architecture. Of late no exportation has taken place, it being little known.

[The green porphyry of Sparta is found at Krokee.]

47 *Tripolitza.*—Piece of black marble. Valued for the polish it takes, and its fine black colour.

[This black marble of Tripolitza is beautiful, owing to the brilliancy of its polish and its black colour. It is found in large strata, near the south-west regions of Tripolitza.]

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48 The PRIOR of the MONASTERY, *Hymettus*—Proprietor.

Piece of marble found near Athens in Mount Hymettus. The ancients used it in architecture, for columns and architraves, both in Athens and Rome. At the present time it is used for corner-stones in the houses of Athens. It is of a light-greyish colour, and is reckoned harder than the Pentelicon marble.

[The white marble of Hymettus is very much used for building purposes.]

THE GREEK GOVERNMENT.

Raw Materials.

49 *Psitalia (Island).*—Piece of marble alabaster. Of this marble the ancients made their lachrymatories.

[The material called Egyptian alabaster, much used by the ancients for various purposes, was not a sulphate, but a carbonate of lime. The alabaster of Italy, Derbyshire, &c., is a sulphate of lime.

From this stone the ancients formed their lachrymal vases, and for that reason it is improperly called ancient alabaster. The major part of the marbles and minerals exhibited were excavated only for home use. They now endeavour to excavate the most rare among them in a regular and profitable manner.—D. T. A.]

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50 RALLI, LUCAS, *Piræus of Athens*—Manufacturer.

Four hanks yellow silk; six white. This thread is from five to six cocoons thread, on the latest French method introduced into Greece. In the factory from fifty to sixty persons are employed daily during the season. This factory has been established six years.

[The rearing of silkworms was known long ago in Greece, as it was first imported from China during the time of its emperors. It has lately acquired a considerable development, owing to the cultivation of the mulberry-tree in many parts of Greece, where it did not previously exist. There are in all upwards of 700,000 mulberry-trees in the kingdom; each tree, when in full growth, is valued at 8 to 10 drachmas. This kind of industry is spread among the different families of the country, and is performed by almost every one during the season appointed for that work, in many parts, without excepting even those who possess considerable wealth. In many districts they make use of select Italian eggs; the cocoons which are produced from them are distinguished for their fine quality. The inhabitants reel the silk with instruments of home manufacture, except in Laconia, Messenia, and Andros, where the introduction of instruments in the Italian style has enabled the inhabitants to improve their machines to some extent, and produce rather better silk, as will be seen by comparing the silk worked in the Italian method with the samples worked by the home-made instruments. The above-mentioned establishments ceased to work some years since; and were replaced six years ago by a more perfect building at the Piræus, by the present exhibitors, which is now in full work, employing from 50 to 60 individuals. The whole quantity of different qualities of silk produced throughout the kingdom is upwards of 70,000 oques, 50,000 of which are annually exported. The remainder is used in the kingdom by the manufacturers of silk stuffs, as well as in other articles that Greek women weave and knit for their own use.]

51 Pantazopoulus, A., *Calamata (Messenia)*—Manufacturer.

Hank of silk, prepared according to the Italian method introduced some years since; the same, prepared according to the old method in Peloponnesus. This kind is used for fine woven silks, and is called in Greece, *Skepiticon;* another, for sewing and embroidery, commonly called *Bersimlichi.*

52 Pithoulis, Nicolas, *Sparta*—Manufacturer.

Hank of silk, prepared according to the Italian method introduced some years ago.

53 Constantoulaki, —, *Hydra*—Manufacturer.

Silk sashes, worn by the seamen of Greece. The factory of handkerchiefs, scarfs, &c., has been established since the beginning of the Greek revolution, and employs about twenty men.

[The above-mentioned sashes and belts are worked for the male inhabitants of Hydra at Constantoulaki's manufactory. This establishment is one of the most perfect of its kind existing in Greece, using the most complete machinery. It employs regularly from 15 to 20 hands. Besides this establishment, the monks in the monastery of St. Elias make the same kind of belts. All these belts are consumed on the spot, as they are much used by sailors. The silks of Kalamus are worked by the nuns of the convent of St. Constantine, which still exists there; they are consumed in different parts of the country, being preferred on account of the strength of the material from which they are made. The shawls of Kumi are woven in the silk establishment of John Apostolas, producing yearly from 100 to 150 of them. Besides this firm, there are also others employed in the same business.]

54 The Nuns of St. Constantine, *St. Constantine's Convent*—Manufacturers.

Silk musquito curtains. Silk handkerchiefs.

55 Calotas, Panagiotti, *Syra*—Manufacturer.

Leather (bullock hide). This article is tanned in different parts of Greece; the best is from Syra, from which island a large quantity is exported to Syria, Egypt, and Turkey. This branch of industry annually increases.

[The arts of tanning and shoemaking are common to all parts of Greece, and especially in some of the islands of the Ægean Sea, from which shoes and tanned hides are often exported to Turkey. The consumption of these articles being considerable in Greece, and the chief materials in abundance, the people are successfully employed in these trades. The art of tanning was formerly limited to the smallest-sized hides; but, some few years ago, it was greatly extended, embracing the preparation of all sizes, both at Pylos of Messenia and Syra. But in the last of these places, from whence the exhibited specimens came, the trade has been so considerably increased that, in addition to the native raw ox-hides, from 40,000 to 50,000 are annually imported by the manufacturers, three-fourths of which come from the Brazils.

The quantity of tanned hides exported from Greece to Turkey, the Ionian Islands, and Trieste, amounts to more than 30,000.]

56 Saris & Rengos, *Athens*—Manufacturers.

Palicar dress, embroidered in gold, and consisting of doulama, fermeli (upper jacket); pair of gaiters; pair of silk garters; fez, with gold tassel; silk sash; fustenella; shirt; pair of trousers; and pair of red morocco shoes. This dress is represented in the accompanying Plate, 113.

[The art of embroidering, both in silk and gold, has of late been considerably improved in Greece. The silk-embroidered dresses are of an inferior description, and the gold-embroidered are only used by the higher classes. As respects men's apparel, gold embroidery is only in use among the irregular troops of the army, and only then by the most wealthy among them. The costume for ladies consists of a short mantelet; if embroidered in silk, it costs about 60 drachmas; in gold, 100 drachmas to 400 drachmas, according to circumstances. The costume sent for exhibition represents the male attire, and varies in price from 2,000 to 6,000 drachmas. Some persons aver that this description of dress is the most economical, as it is not subject to various changes of fashion, and also from its durability.

The persons who embroidered the dress exhibited are among the most skilful, having been educated in the School of Art, and have subsequently adapted the knowledge acquired there to manufactures. The fez was manufactured in the cathedral; a similar manufactory to that of Tunis having been established there by the Government some years since, and annually produces 5,000 to 10,000, which are principally used in the kingdom, only a small portion being sent to Turkey.

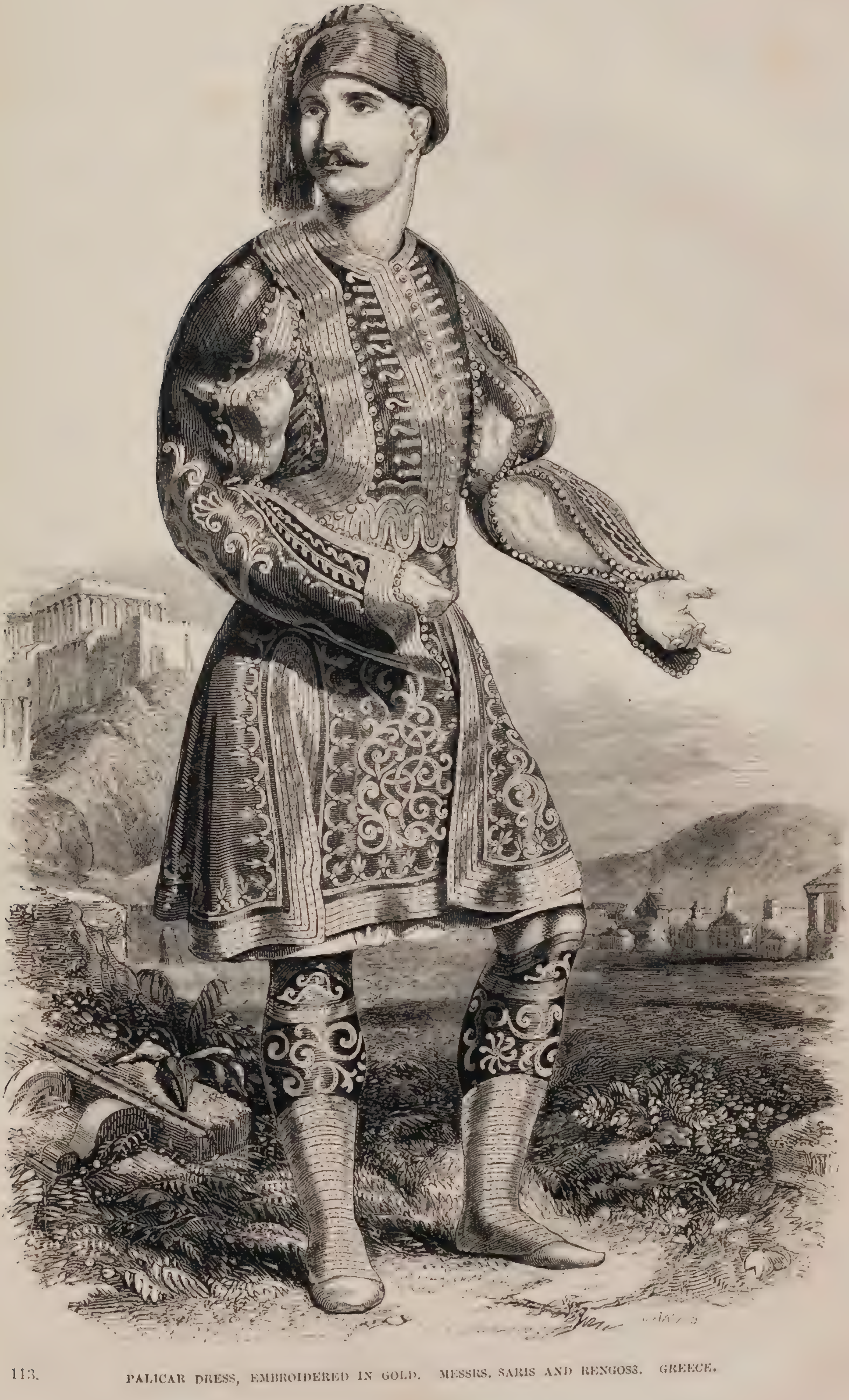
Shoes.—These are made by Greek shoemakers from leather tanned in Greece. The manufactures of tanning and shoemaking are increasing in Greece. In addition to the ordinary description of leather, they also skilfully imitate morocco in many colours, which have been praised by Europeans. The yellow morocco is the best, and is used for many purposes. The price of shoes, similar to those exhibited, is 4 to 5 drachmas. In addition to the goods exhibited, many samples of oil and wine were sent to the Central Commission at Athens, but were rejected when the Commission received notice from the Central Commission of England that such goods would not be received; but, as the export of them forms a considerable item in the exports from Greece, we deem it advisable to give a few remarks relative to these articles.]

57 Congos, George, *Patras*—Manufacturer.

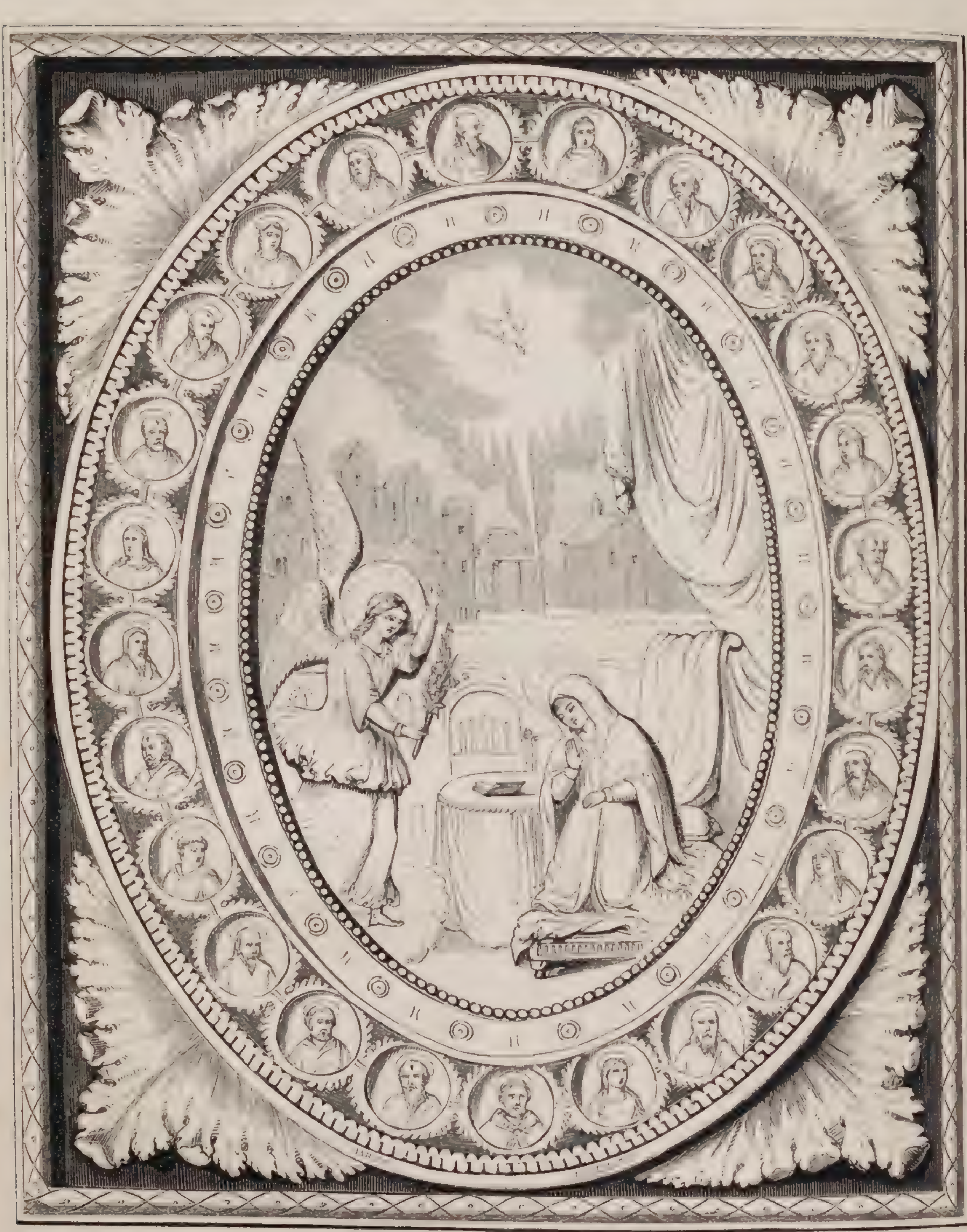
Liquorice juice. The root is found in different parts of Greece, and is sweeter than that found in Sicily and Spain. The juice contains a greater quantity of saccharine matter than that made in Calabria.

[The plant yielding liquorice is *Glycyrrhiza glabra;* it is one of the papilionaceous plants. The sweet, mucilaginous juice of the roots, in an inspissated and often adulterated form, is the stick-liquorice, or solazzi-juice of commerce.—R. E.]

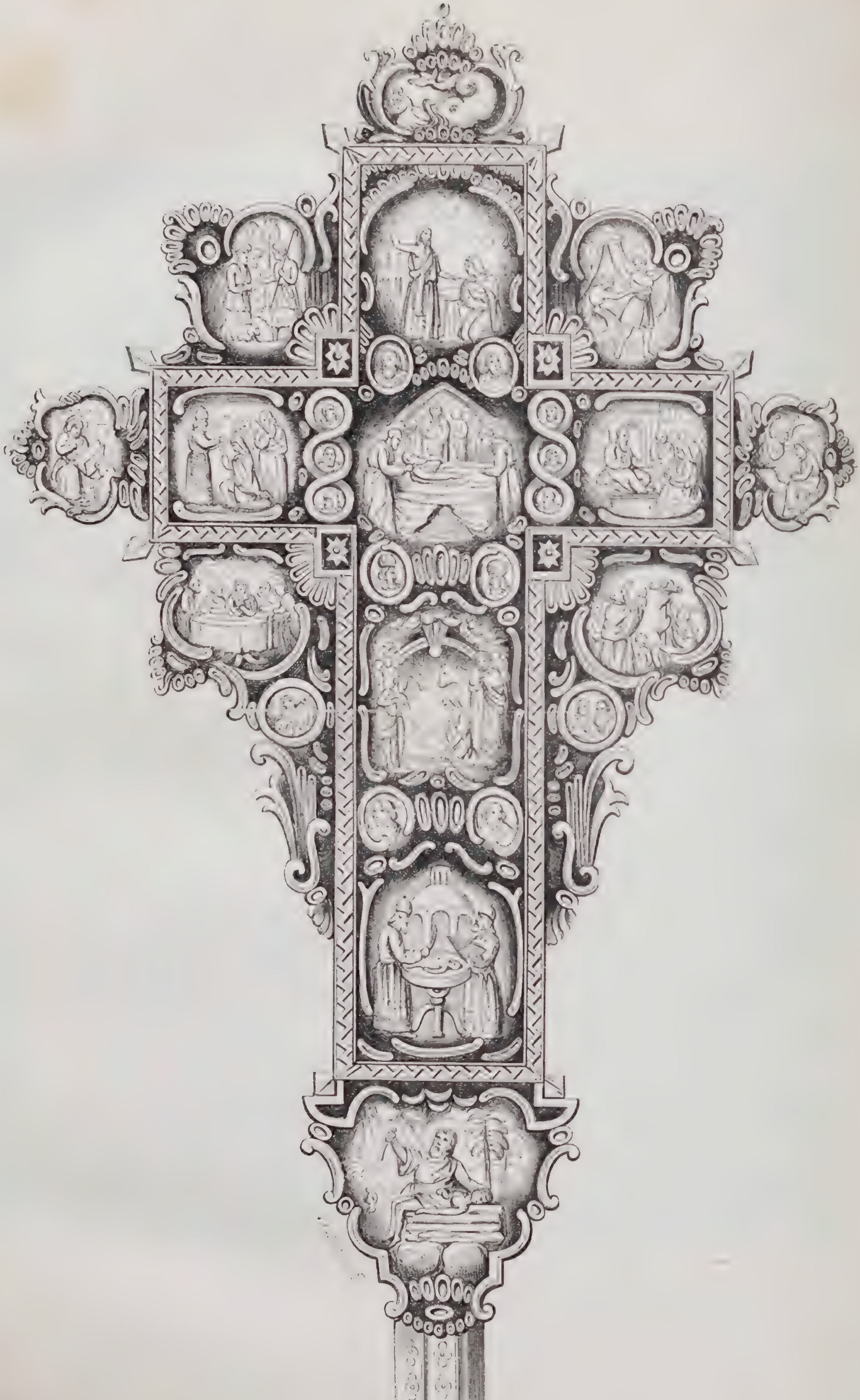
[The liquorice root grows wild in many parts of Greece, and especially in the province of Achaia, at Corinth, Phthiotis, and Missolonghi, in great abundance; its quality is considered very good, and has induced many to undertake its manufacture. But the number is now much



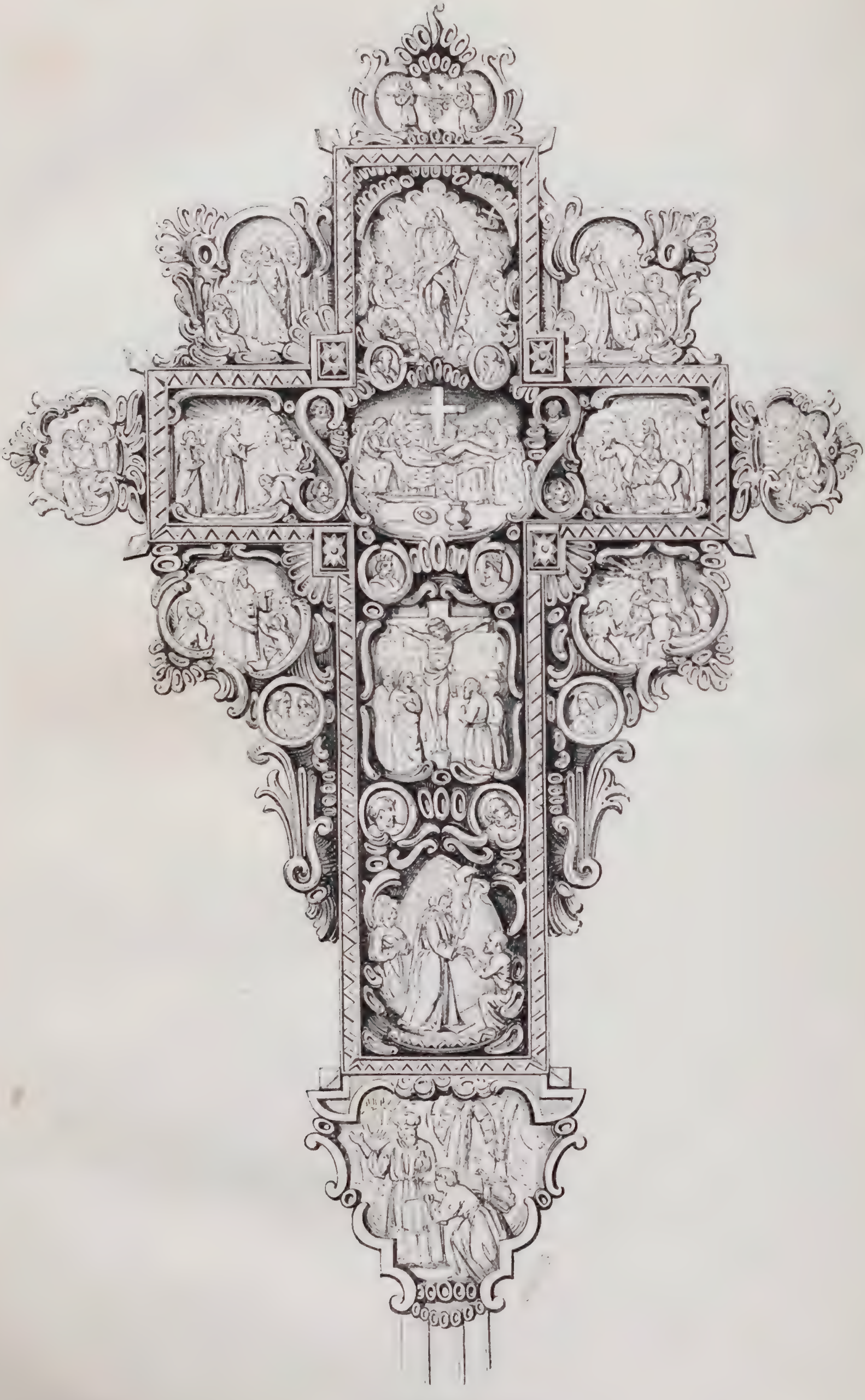
113. PALICAR DRESS, EMBROIDERED IN GOLD. MESSRS. SARIS AND RENGOSS. GREECE.



SPECIMEN OF WOOD CARVING, AFTER THE OLD BYZANTINE STYLE. GREECE.



89. CARVED CROSS. GREECE.



88. CARVED CROSS. GREECE.

reduced, owing to the cultivation of the land, which makes the root scarce. The establishment at Patras, from which the exhibited sample comes, prepares yearly more than 40,000 oques of liquorice juice.]

58 **John, Apostolos**, *Cumi*—Manufacturer.

Ladies' scarfs. Many inhabitants of Cumi are employed in the manufacture of this article.

59 **Triandaphylos, the Rev. Agathangelos**, *Athens*—Designer and Artist.

Cross, carved in wood. A carved wooden image of the Annunciation of the Virgin. This work is represented on an enlarged scale in the Plate 158. Both are carved after the old Byzantine style, which is still preserved in Greece. The reverse and obverse of this cross is represented in the Plates 88, 89.

[This kind of work is a remnant of the Byzantine art, and exists in some of the convents of Greece, and particularly at Mount Athos, where the monks employ themselves diligently at it. But as the finer works require much minuteness, they prefer executing inferior kinds; so that only few understand this art perfectly. A few years since, the Greek Government sent to Mount Athos for one of the most experienced artists, and appointed him Master in the School of Arts at the cathedral. The object intended to be represented is first sketched on the box-wood (which grows abundantly in Greece), and afterwards carved by graving instruments. The two specimens sent were carved by the same monk; the one represents the crucifix, and the other the Annunciation; and around them are carved objects, typical of some of the principal events in Scripture.]

60 **Vitalis, Lazarus**, *Athens*.

Bas-relief of the Pentelican marble, representing a small portion of the frieze of the Parthenon, in half scale of the original. It is sent as a specimen of the marble when worked.

[Only a few remains of the art of sculpture (which reached to such a degree of perfection in ancient times in Greece) are now found, and principally among the islands of the Ægean Sea, where the inhabitants still cultivate this art in its lowest grades. There are many marble establishments at Athens, all well employed in building houses and magnificent public establishments. The Greek Government, some few years ago, in order to encourage the further improvement of this art, ordered a separate master for sculpture in the School of Arts at Athens, the students from which are sent to Rome to perfect themselves in this art.

The two specimens exhibited are the production of pupils of the said school, in Parian and Pentelican marble, in imitation of ancient originals in the Parthenon, half-size. They represent two horsemen, and are intended chiefly to exhibit the quality of the marbles when worked.]

61 **Vitalis, George**, *Athens*.

Bas-relief of Parian marble, representing a small portion of the frieze of the Parthenon in half scale of the original. It is sent as a specimen of the marble when worked.

62 **Oblasson, Edward**, *Smyrna*—Producer.

A rich Albanian dress, intended for a pasha of three tails, consisting of an embroidered Damascus purple silk cloak; jacket, waistcoat, pair of leggings; white kilt, Syrian silk sash, and red cap or fez.

In concluding the notice of the exhibited articles, we may observe that Greece has been able to double many of her products in the space of about 20 years, and that more than 150 millions of drachmas have been spent in the cultivation of plantations. Greece, replying to the courteous invitation addressed to her by England, whom she considers a protectress and beneficent power, presents herself at the industrial meeting of all nations, conscious of her own demerits, but confident that her exceptional circumstances will justify her efforts, and obtain for her industry a benevolent reception.

Τα ῥητὰ τὰ ὁποῖα ἐτέθεσαν ἐπὶ τῆς σημαίας εἶναι τὰ ἐφεξῆς.
Θαρσεῖν χρή . . . τάχ᾽ αὔριον ἔσσετ᾽ ἄμεινον.
(Θεοκρ. Εἰδυλ. δ᾽ στιχ. 41.)

Ζηλοῖ δέ τε γείτονα γείτων,
Εἰς ἄφενον σπαύδοντ᾽. ἀγαθὰ δ᾽ ἔρις ἥδε Βροτοῖσι.
(Ἡσιόδη Ἐργ. καὶ ἡμ. στιχ. 13, 14.)

μεταφρασις εἰς τὸ Ὀγγλικόν.

"Take courage . . . to-morrow will be better."
(*Theocritus, Idyl* iv. v. 41.)

"The neighbour is zealous at the rapid prosperity of his neighbour. Such strife is good for mankind."
(*Hesiod, Works and Days*, v. 13, 14.)

EGYPT

NORTH AREAS, G. H. I. J. 41.

Commissioner, Captain ABDEL HAMID, *Alexandria, and* 54 *Brompton Square, London. Agents*, REDJEB HASSAN EFFENDI, *Alexandria;* HASSAN ALI EFFENDI, *Alexandria. London Agents*, CHARLES JOYCE *and* P. R. LAZZARI. *Customs' Agent*, Mr. C. J. MAJOR, 21 *Billiter Street, City.*

THE articles exhibited by the Egyptian Government are enumerated under nearly 400 heads; but as a numeral has been given to almost every article, the collection is not of so extensive a character, although very complete and interesting, as might have been otherwise anticipated. The raw materials and produce include specimens of alabaster, various minerals, and some interesting samples of saltpetre, and of clays, &c. The drugs exhibited, include the commoner articles of pharmacy known in commerce, such as cassia, gum ammoniac, castor oil, saffron, &c.; but the dried and preserved fruits include some specimens not commonly met with; of these, varieties of dates form the principal. The agricultural products of this wonderfully fertile country are well represented in the samples of rice, wheat, Indian corn, barley, beans, lentils, &c. Some animal productions of interest are also shown, with specimens of useful and ornamental woods. The domestic and other implements present a singular contrast to our own, and are, by their inartificial character, strongly opposed in character to the beautiful specimens of embroidery and textile art also exhibited. The preserved and prepared skins of various animals, in a state fit for use as leather and otherwise, are shown. A fine specimen of a Damascus sword is exhibited. The cottons, linens, and silks of the native looms are very beautiful, and, when exhibiting design and colour, faithfully indicate that arrangement technically called the "Oriental style." An interesting collection of miscellaneous objects is also shown.—R. E.

THE EGYPTIAN GOVERNMENT.

Specimens of minerals of various kinds:—

1 Small top of a table in alabaster.
2 Square block of alabaster. 3 The same.
4 Large top of a round table in alabaster.
5 Square block of alabaster.

[The stone here exhibited and called alabaster is a carbonate, and not sulphate, of lime, and is known generally to workers in marble as *oriental alabaster*. Its hardness is quite equal to that of ordinary statuary marble, and it is rather brittle. The extreme beauty and richness of tint, and the peculiar form it exhibits in the veining, are derived from the circumstances of its formation. Much of it is deposited from water, and it is met with only in a very few localities in a small district. The ancient quarries have been only recently re-opened, but blocks of large size and perfect beauty have already been obtained.—D. T. A.]

6 Piece of petrified wood.

[Large quantities of petrified wood have been found in Egypt, chiefly in a spot not far from Cairo. The wood is generally silicified, and sometimes is distinctly jaspery. It has a very uniform texture.—D. T. A.]

7 A case containing plaster-stone.
8 Sample of mineral sulphur.
9 Case containing samples of yellow and grey earth.
10 Fardeh, large baskets.

11 Case containing different kinds of natron, viz., natron, carnoudgi, from the lake of Harrara; and black and white sultani, from Terraneh.

[Natron (sesqui-carbonate of soda), called by mineralogists *Trona*, is a mineral known to occur very abundantly in some lakes situated to the west of the Nile, one day's journey from Terraneh. The salts present in the water (which includes much sea salt) crystallize separately when the waters are evaporated during the warm dry season, and the carbonate of soda is easily collected in large quantities.

On the borders of the great desert in Fezzan, the same mineral is found in abundance; but the exportation has diminished considerably since the carbonate of soda has been made artificially.—D. T. A.]

12 Two samples of potter's earth and clay.
13 Three cases containing different kinds of saltpetre.
14 One case containing a sample of hard red stone.
15 The same, of white stone.
16 Mineral natron.

[What is here called mineral natron is the crystallized trona (sesqui-carbonate of soda), found native in circular elongated crystals in the kingdom of Fezzan. These crystals are soluble in water, and have an acrid taste.—D. T. A.]

17 Raw natron of Lower Egypt.
18 Refractory or stiff earth of Assouan.

A collection of drugs and medicinal plants :—

19 Cassia. 20 Gum-ammoniac (species of *Ferula*).
21 Nigella, or fennel flower seed. 22 Colocynth.
23 Opium of Upper Egypt.
24 Castor oil (oil of *Ricinus communis*).
25 Senna (species of *Cassia*). 26 Tombac.

Various specimens of dried and preserved fruits :—

27—33 Dates, sultani, from Siouah; from Ghazzal; sultani, from Oasis; pressed, from Cairo; from Amri; from Ibrim; sultani of Cairo.
34 Aqua, skinned and pressed dates of the province of Charkey.
35 Dates of Siouah.
36 Aqua, pressed dates of Ghizeh.
37 Tobacco of Upper Egypt.
38 Fruits of Doum palm, (*Hyphœne thebaica*).

[The Doum palm, *Hyphœne thebaica*, is highly valued in Egypt for its fruit. This resembling in its lower rind the appearance of gingerbread, has given the name, the gingerbread-tree, to this palm. Its fruit forms an important article of food among the inhabitants of the districts in which it abounds.—R. E.]

39 Fennel flower oil.
40 Rice, ordinary, of Damietta.
41 Rice, white, of Damietta.
42 Rice, red, of Damietta.
43 Chick-pease parched.
44 Refined sugar from the steam manufactory at Minieh.
45 Refined sugar of the steam manufactory.
46 Fenugreek of Lower Egypt (*Trigonella fœnum-græcum*).

[The plant yielding fenugreek seeds belongs to the natural order *Fabaceæ*. It is reported to have medicinal qualities; butit is not employed excepting by the veterinary surgeon. It is valued on account of its emollient qualities.—R. E.]

47 Raw sugar. 48 Half-refined sugar.
49 Edible plant, from Habelaziz.
50 Liquorice paste. 51 Mustard seed.
52 Wheat of Upper Egypt, first quality.
53 Lettuce-oil. 54 Preserved dates.
55 Carthamus oil (*Carthamus persicus*).
56 Honeycomb of Mehalech.
57 Large olives in oil. 58 Olives, ordinary quality.
59 White honey of Mehalech, first quality.
60 Dates in honey, from the province of Charkyé.
61 White honey of Mansourah.
62 White honey of Charkyé.
63 Three vases of butter, different kinds.
64 Tamarinds. 65 Troêne.
66 Sugar candy. 67 Linseed.

A collection of agricultural products, grain, &c. :—

68 Wheat of Upper Egypt.
69 Wheat of Lower Egypt.
70 White Indian corn. 71 Castor-oil seed.
72 Clover seed. 73 Barley of Upper Egypt.
74 Sesamum seed (*Sesamum orientale*).
75 Rice of Rossette, Fahl.
76 Cumin seed (*Cuminum cyminum*). 77 Fennel.
78 Aniseed (*Pimpinella anisum*).
79 Indigo of the country. 80 Poppy seed.
81 Clover seed of Meskaôui.
82 Botargo of Damiette.
83 Rice of Rosetta, Aüselbent.
84 Beans of Lower Egypt.
85 Small Indian corn, yellow, Eouedgi.
86 Rice of Rosetta, first quality.
87 Small white Indian corn of Benisouet.
88 Harico of the country.
89 Beans of Upper Egypt.
90 Small red Indian corn, Eouedgi.
91 Yellow Indian corn.
92 Small white Indian corn of Lower Egypt.
93 Wheat of the province of Charkyé.
94 Barley of Lower Egypt.
95 Chick-peas of Upper Egypt.
96 Lentils of Upper Egypt.
97 Chick-peas of Lower Egypt.
98 Lentils of Lower Egypt.
99 Yellow Indian corn of Turkey. 100 Saffron.
101 Peas. 102 Oil of sesamum.
103 Sugar for Turkish drink (sherbets).
104 Sugar-canes.

Specimens of flax, &c. :—

105 Flax combed by machine.
106 Makò cotton, first quality.
107 Flax of Fayoum. 108 Flax of Menauf.
109 Hemp seed.

Miscellaneous articles and products :—

110 Lupins. 111 Essence of mint.
112 Club of ebony of Sennar.
113, 114 Horns of antelopes and gazelle.
115 Elephant teeth of Soudan. 116 Virgin wax.
117—119 Horns of the rhinoceros, wild bulls and goats.
120 Gum of Sennar, selected specimens.
121 Gum of Sennar. 122 Mimosa seeds.
123 Cardamomum.
124, 125 Horns of the buffalo and of the ox.
126 Maps, ordinary, of Upper Egypt.
127 Skin of a crocodile. 128 Mat for cheese.
129—131 Oil of cotton seed, turnip, and linseed.
132 Fibres of the date-tree.
133 Tray of date-leaves of Rosetta.
134 Sea Island cotton, cultivated by T. W. Larkins.
135 Rose-water of Fayrum.
136 Mint-water of Rosetta. 137 Orange-flower water.

Specimens of woods, &c. :—

138—140 Sample of alizier wood; of sycamore; and of palm, Doum.
141, 142 Trunk of date-tree; of ebony of Sennar.
143 Piece of ebony (*Diospyrus ebenus*).

[The ebony-tree (*Diospyrus ebenus*) is a native of climates principally tropical. The timber is highly valued for ornamental uses, and is largely imported into this country for such purposes.—R. E.]

144 Rules of ebony, Sennar.
145 Piece of sweet palm-tree. 146 Acacia wood.
147—149 Sample of palm-tree, Doum; of date-tree; of azedarak (*Melia azedarach*).
150 Net of fibres of date-tree.
151 Cotton of second quality. 152 Hemp.

Instruments and implements :—

153 Coffee-mill. 154 Mill to be worked by the hands.
155 Trough for paste and bread.
156—158 Sieves for sesamum, wheat, and Indian corn.
159—161 Horse-hair sieve, and two silk sieves.
162 Measure in wood, bound in iron, Rouht.
163 Weight in brass. 164 Goat-skin bottle.
165 Steelyard with its appendages.
166 Flints. 167 Basket of dates. 168 Wooden locks.

Agricultural implements :—

169 Pick-axe. 170 Bill-hook. 171 Sickle for clover.
172 Hoe. 173 Egyptian plough.
174 Norez machine to sow seed.

Specimens of cotton manufacture :—

175 Cotton cloth for the sails of a frigate.
176 Cotton cloth for topsail of a vessel or man-of-war.
177 Cotton cloth for the sails of a vessel or man-of-war.
178 Cotton cloth for topsail of a frigate.
179 Cambric printed in the manufactory, Shoubrack.
180 Cotton cloth, unbleached, Bissa.
181 Cotton cloth, bleached, Bissa.
182 Cotton cloth, bleached, Settine.
183 Sail-cloth for the boats of the Nile.

184 Cotton cloth for soldiers' shirts.
185 Cambric, unbleached. 186 Cotton cloth, Borsato.
187 Cotton cloth for soldiers' pantaloons.

Woollen productions :—
188 Woollen brown covering.
189 White woollen belts of Upper Egypt.
190 Coat in black wool.
191 Coat of fellah, in black wool.
192 Cap of fellah, in brown beaver.

Articles in silk and embroidery :—
193 Melayé, in silk, red ground, stripes worked in gold.
194 Habara veil, in black silk, for females.
195 Silk piece goods, violet colour, in four stripes.
196 Silk piece goods, dark green, in orange stripes.
197 Apron, in dark blue, with yellow and red border.
198—201 Silk piece goods: violet, with two stripes; dark blue, with four stripes; yellow striped; crossed in blue.
202 Table cloth, in silk, red ground, chiné in gold, green border.
203 Silk piece goods, crossed in red.
204 Towel, with borders.
205—210 Silk piece goods: dark purple; crossed violet; green, with two stripes; violet, red, with two stripes; red, with green stripes.
211 Silk and gold fringe, for divans.
212 Sample of gold and silk fringe, for curtains.
213 Fringe in gold, to ornament divans.
214 Samples of gold fringe, for divans.
215 Crape, of red silk.
216 Plaited silk, of different colours.
217 Silk dark-blue cords, to suspend pistols.
218 Pair of garters, in silk and gold.
219 Tassel of dark-blue silk, for tarbuche.

Fringes, embroideries in gold, &c. :—
220 Sample of plaited gold.
221 Sample of gold fringe.
222 Samples of fringe, in various colours.
223 Fringes of black silk and gold, to ornament sword handles.
224 Cavalry sword, in blue and gold.
225 Samples of plaited silk and gold.
226 Linen cloth, for packing, from Lower Egypt.
227 Dromedary saddle, with its appendages.
228 Arab saddle, with the same.
229 Saddle of Cairo, worked in gold thread, with its appendages.
230 Saddle-cloth, in beaver.
231 (Marshaka) saddle, in red cloth, embroidered in gold.

Specimens of skins, leather, &c. :—
232—234 Skins of the ox: black; bleached white; and red.
235 Skin of buffalo, bleached white.
236 Skin of buffalo, of Rosetta.
237 Skin of ox, for soles.
238 Skin of buffalo, bleached and tanned with oak bark.
239 Skin of calf, for boots.
240 Skin of calf, from Domanhour.
241 Buffalo hide, for soles.
242 Oxhide, bleached and tanned with mimosa seed.

[In all probability the mimosa alluded to, as employed for the preparation of leather, is *Acacia nilotica*, the pods of which are used by tanners in Egypt, in consequence of the tannin they contain. Many other species of *Mimoseæ* are valued for a similar property, and form important articles of commerce.—R. E.]

243 Brushes for stable use, made of date fibres.
244—246 Wallets, in wool, ornamented with leather; from de Bein Mezar, Ghizeh, and Upper Egypt.
247 Skin of camel.

Collection of miscellaneous articles :—
248 One hundred and sixty-five volumes of works in Turkish, Arabic, and Persian, published at Boulac.
249 Carpet, in coloured beaver.
250 Sail cloth, of Broulos.
251 Holster for pistols, in skin, &c.
252 Damascus sword, ornamented in silver gilt, with gold belt.
253, 254 Gut-cord, used in cleaning cotton and wool.
255 Basket for cheese, in cane.
256 Scales made of date branches.
257 Small coloured basket, from Upper Egypt.
258, 259 Cord, made of date fibres, from Broulos and Ghizeh.
260 Wax candles, white and yellow.
261 Yellow shoes.
262—265 Red shoes: double and single soled, de citadin, and for grooms.
266 Narguilé, or water-pipe hookah.
267 Donkey saddle.
268—270 Leather belts, of various sizes.
271 Red morocco tabacco bag.
272, 273 Mother-of-pearl rows, large and small.
274 Chaplet made of Dourn nut.
275 Bottle for antimony.
276 Ostrich eggs.
277 (Marghouna) basket, made of date branches.
278, 279 Pipe-bowls, of Assouan and Assiout.
280 Bag, of goat-skin.

Veils, muslins, silks, &c. :—
281 (Tarka) veils, for women, red ground, with flowers.
282 The same, red ground, striped.
283 The same, of embroidered muslin.
284 (Kamar) silk belt, for grooms.
285—287 (Dekké) embroidered strings for pantaloons.
288 (Yazma) kerchief, for women's head-dress.
289 Silk turbans, for Bedouins.
290 (Melayé Bassiouni) silk veil, for women.
291—293 (Bemoud) red silk strings.
294 (Zardakham) apron, for dress, of embroidered silk.
295, 296 Silk piece goods, with yellow and red grounds.
297 (Chaki) cotton-and-silk piece goods.
298 Silk piece goods, dark green. 299 Travelling belt.
300 (Derayé) thick silk, for lining.
301 Taftas, violet-shot.
302—304 Tarbouches of Touha, of various sizes.
305 (Cotné) silk and cotton piece goods.

Linens, silks, &c. :—
306—309 Linens, from Lower Egypt, Mehallah, and d'Abiar.
310 Belt, of red silk.
311 Linen cloth, from Mehallah.
312 Linen cloth, ordinary, from Assiout.
313 Gold tassels. 314 The same, for pipes.
315 Silk tassels, blue and gold.
316 Silk tassels for pipes.
317 Silk tassels, with the top in gold.
318 Black silk crape.
319 Muslin handkerchief, embroidered in Cairo.
320, 321 (Takié) white caps.
322, 323 Muslin handkerchiefs, embroidered at Alexandria.

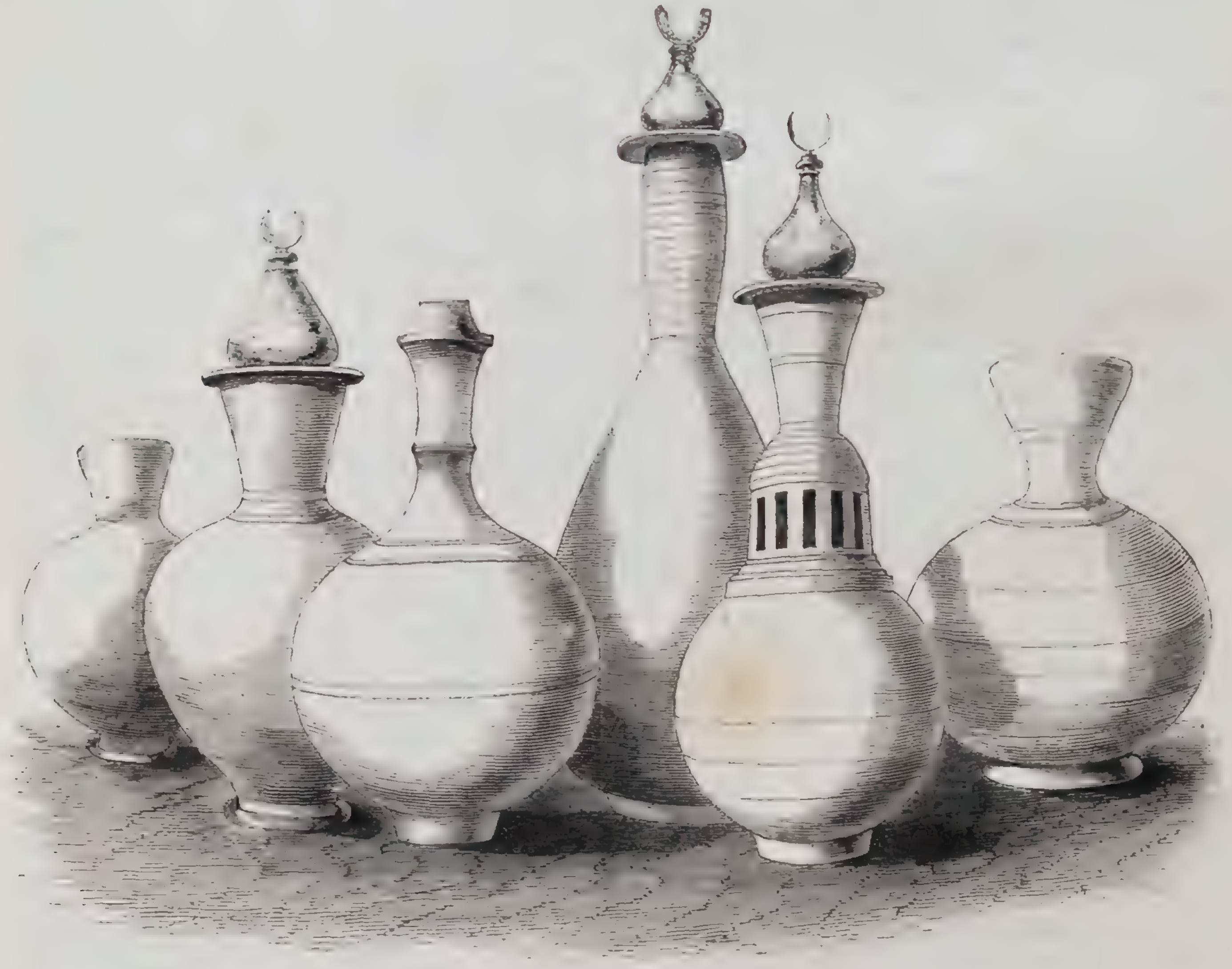
Articles of dress, &c. :—
324 (Azbé) large black silk head-dress.
325 Silk piece goods, dark blue. 326 Taftas, red.
327 (Zardakham) silk apron, worked in gold.
328 Muslin handkerchief, worked at Alexandria.
329 Bag for a watch, embroidered in gold and silver.
330 Tobacco bag, embroidered in gold and silver.
331 Muslin handkerchief, embroidered at Alexandria.
332 (Coufyé) silk veil, with borders, for men.
333 (Azbé) head-dress, of black silk, from Cairo.
334 Taftas, red and green, shot.
335 Samples of taftas, different colours.
336 (Melazé) woman's veil, of silk.

337 (Cotin) silk-and-cotton piece goods.
338 Linen cloth, fine, from Assiout.
339 (Chaks) silk-and-cotton piece goods.

Various domestic articles :—
340 Lantern, made of date branches.
341 Extinguisher, of Kench earth.
342 Jar, of the same. 343 Cover, of Indian cane.
344 Basket, containing a water jug.
345 Water jugs, of Kench earth.
346 Basket, containing a marghoune.
347 Water jugs and bottles, of Kench earth. A group of these objects is represented in the illustration below.
348 Writing case, in alizier wood. 349 Fans, &c.
350—352 Coloured trays, made of date branches, of various sizes.
353 Small baskets, made of the same, from Upper Egypt.
354 Piece of thick rope, made of date branches.

[Many of the family of the *Palms*, of which the date-tree is a useful member, yield fibrous materials applied to a variety of purposes. There can scarcely any purpose be named in domestic economy, the want of which these valued trees, taken as a tribe, do not supply, whether it be implements, or textile materials, or food, or in some cases habitations.—R. E.]

355 (Leban) rope to tie boats.
356 (Salatch) rope to tie loads.
357 Large baskets, from Upper Egypt.
358—360 White baskets, of various sizes.
361 (Batta) butter-tub, for voyage, of leather.
362 Cords made of date-fibres, for carrying straw.
363 Pipes from Cairo. 364 Bowls of pipes.
365 Dromedary's saddle, with complete appendages.
366 White and black wool. 367 Soda.
368 Narguilé water-pipe or hookah, in zinc, with the silver stand, &c. 369 Inkstand in silver.
370 Holster for pistols. 371 Raw and refined alum.
372 Saddle in velvet, richly ornamented, and its appendages.
373 (Marchaha) saddle without the back, and its appendages.
374 Catalogue of oriental books.
375 Silver tray for coffee.
376 Stoppers for jugs made in earth of Assioul.
377 Box for holding coffee.
378 Silver sieve for coffee.
379 Flask for antimony, in silver.
380 Silver coffee pot. 381 Porcelain coffee cups.
382 Silver stands for cups.
383 Large box, containing a coffee service.
384 Silk, first quality (imitation of Broussa), and various other qualities of silk.
385 Silver stoppers for jugs.
386 Flask for rose water, and cassolettes for perfume.
387 Rechaud, coffee stand, in silver.
388 Liquorice wood.
389 Rum, from Upper Egypt. 390 Oil.
391 Refined sugar, from Ibrahim Pasha's refinery.



Water Jugs and Bottles of Kench Earth.

TUNIS

South Areas, L. to O. 42; P. 40 to 42; Q. R. 41, 42.

This large collection of Tunisian productions has been sent by one exhibitor only, in the person of His Highness Mushir Basha, Bey of Tunis. The articles are grouped under about 190 numbers; but as the principle of enumeration is one chiefly of convenience, and a large collection of the articles are frequently brought together under one distinguishing number, the actual quantity exhibited cannot be properly estimated from that arrangement. The raw materials include several very interesting products. Among the minerals are specimens of lime and limestone, lead and iron ores, from Slata and from the mountains of Wargha and Gerissa; specimens of various kinds of gypsum, some fit for common cement, others for the more delicate ornaments of the arabesque style. The vegetable products are also instructive. Saffron, indigo, a dry preparation of semola called Koskossoo, dried apricots, figs, raisins, and dates, form a part of these articles. The leaves of the famed Henna, used for dyeing parts of the person, are also exhibited. Tobacco and snuff of every variety form, as may naturally be expected, a not unimportant feature of their collection of vegetable products. The agricultural products, wheat and barley, peas, lentils, &c., are represented in their different varieties. The animal kingdom has likewise furnished some materials to this collection, in the skins of the lion, leopard, black sheep, &c., which are exhibited.

The articles of apparel, however, constitute one of the most singular and attractive features of this group of objects. Of these, every portion of dress is represented. The celebrated Fez caps, with their brilliant dyes, so important an article of Eastern commerce, are shown of all varieties of make. Cloaks, joubbas, mantles, shawls, jackets, &c., of various materials, but all indicative of the peculiar characteristics of Oriental taste and design, are among these articles. Apparel of a lighter description, for the use of women, is also shown. Turbans, boots, and shoes, of brilliant colours, represent these portions of Oriental costume. The specimens of rich embroidery, applied to human apparel and to the decoration of the caparisons of the horse, with the light and elegant ornaments in velvet attached to them, are attractive objects, and are presumed to be of considerable value. The hair tent in the centre of the space represents the simple and ancient protection from the weather adopted by the Bedween Arabs. A number of miscellaneous objects are also exhibited. The beautifully carved doors will also receive attention. The arrangement of the space allotted to these productions is also interesting, and presents somewhat of a realisation of a series of small Eastern shops, the counters and stalls being fitted, and the articles being grouped in such a manner as to convey this impression.—R. E.

His Highness Mushir Basha, Bey of Tunis, under care of Sy Hamda Elmkadden, Pro-Commissary appointed for the occasion, and Moses Santillana, Interpreter to his Excellency General Sidy Mahmoud Benyad, the Bey's Commissioner, 9 *China Terrace, Kennington Road.*

1.—Small blankets, manufactured at Gafsa. Mantles, wool and silk.

2.—Small blankets, with silk, &c. Mantles, with stripes.

3, 4.—Gafsa blankets, with silk, &c. Mantles, with stripes.

5.—23 Gafsa blankets, wool. 32 Gafsa blankets, larger size, wool. 20 mantles, with stripes.

6.—143 bornuses, manufactured at Gerid and Gafsa. 24 bornuses, more simple, manufactured at Kaff. 2 bornuses, of the same description, manufactured at Gafsa. 36 bornuses, woven with silk.

7.—7 pieces for making bornuses, with silk. 95 shawls, white and coloured. 15 joubbas, white and coloured. 26 mantles, white and coloured, with silk. 60 mantles, white and coloured, with silk. 60 mantles, of the same description. 25 shawls, all wool. 31 shawls, finer sort. 34 coloured Gerby joubbas. 2 joubbas, with crimson ornaments, Gerby manufacture. 6 mantles, woven with silk, of Gerby manufacture. 25 white girths. 2 light blue girths. 1 light crimson girth. 24 waist girths. 4 woollen joubbas, Gerby manufacture. 7 shawls for white men. 175 taled, used by Jews during their prayers. 11 joubbas, of Gerid, with silk. 23 mantles, woven with silk. 12 small blankets, Touzer manufacture. 113 bornuses, with silk.

8.—32 blankets, made at Touzer. 11 of the same. 23 blankets, of Gerby manufacture. 15 mantles, of Gerby manufacture. 10 mantles, of Gafsa manufacture.

9.—6 mantles, common, Bedween style. 2 mantles, common, black. 5 Jerby shawls. 6 shawls, Tunisian style. 6 pieces of common Tunisian-manufactured wool. 6 woollen complete dresses, used by seamen, &c. 6 long jackets, used by seamen, &c. 16 blankets, of Jerby manufacture. 10 common mantles, used by the Bedwenees of Sahel. 4 blankets, made at Sahel.

10.—10 dozen red caps, largest size, called Calabash.

[The red caps of Tunis, called *Beretti*, are known and celebrated throughout the East. Their manufacture at one time afforded employment to more than 50,000 individuals. In consequence of the establishment of a somewhat similar trade in red caps at Marseilles, the Tunisian manufacture has greatly declined. The red dye of the Tunis caps is said to owe its brilliancy and permanence to the peculiar properties of the water of a river, on the banks of which the dyeing is conducted. The caps are steeped in alum water for some time before being dyed. —R. E.]

10 dozen red caps, smaller size, called Calabash. 10 dozen of the same. 99 caps, called Orta. 8 dozen caps, called Sakes. 10 dozen Ottoman court uniform caps, called Majidia. 5 dozen, called Kaleb-shed. 8 dozen, smaller size, called Hramy sakes. 2 dozen, long shaped, Arab style. 2 dozen red caps, smaller size, called Zenna. 2 dozen, same description. 16 dozen, called Orta. 6 pieces of silken stuff, called Garmasud, imitation of India. 1 silk waist girth. 6 face coverings. 2 half-pieces of blue cotton manufacture. 4 silk mantles, used by Arabs. 1 silk girth, used by town people. 1 dozen silken shawls, made at Kirwan. 4 coloured girths, made at Kirwan. 6 Arab veils. 12 handkerchiefs. 10 curtains. 1 silk girth, Algerine style. 10 head girths, Kirwan style. 1 piece of light veil, used by town ladies. 1 piece of the same, made at Kirwan. 1 piece of the same. 12 silk aprons, Algerine style. 7 gaze dresses. 2 of the same, another size. 3 of the same. 3 ladies' waist girths, small. 1 piece of ribbon. 12 silk gaze scarfs. 12 head coverings. 3 small girths. 5 dozen kerchiefs. 2 dozen neckerchiefs. 2 dozen small handkerchiefs. 23 pieces of striped silk, for men's dresses. 2 dozen head coverings, imitation of Morea. 5 silk fancy turbans. 1 Jewish men's girth. 4 aprons. 21 aprons, *Algerine fashion*. 4 joubbas, Gerbine manufacture. 5 silk mantles. 7 Jewish religious dresses. 1 piece of silken manufacture. 1 piece of the same, of another description. 1 piece of the same. 2 large silk and wool gentlemen's girths. 3 of the same. 4 head dresses, used by town ladies, largest size. 6 of the same, smaller size. 6 of the same, used by Kirwan ladies. 4 of the same, smaller size. 1 dozen coloured handkerchiefs. 9 silk scarfs. 3 silk scarfs. 1 silk curtain. 1 fancy silk scarf. 1 piece of yellow silk manufacture. 4 pieces of the same, various colours. 3 pieces of gaze veil. 12 cotton head coverings. 2 Biserta aprons. 2 Biserta towels. 12 of the same, yellow. 12 of the same, double size. 12 of the same, Sfax manufacture, with silk, imitation of Syria. 12 of the same, used for bathing, with silk. 12 of the same, without silk. 12 of the same, used for shaving. 6 pieces of linen stuff, made in Tunis. 6 pieces of the same. 10 pieces of the same, made at Susa. 6 turbans, made at Sfax, red.

11.—4 woollen blankets, made at the Gala, a province of Sahel. 2 of the same, larger size. 11 joubbas, manufactured by the Hmamma tribe. 1 joubba, manufactured at Kirwan. 12 mantles, manufactured at Kirwan. 10 pieces for making bornuses, strong stuff. 20 pieces for bornuses, used by mountaineers. 5 black bornuses. 2 black bornuses, imitation of Tebessa, made at Gafsa. 2 pieces for making bornuses. 17 red bags, used for feeding horses. 20 red bags, or purses, for placing on horseback. 17 red girths. 20 red bags, for placing on horses. 24 complete joubbas, silk and wool, made in Kirwan.

12.—12 pair of men's shoes, Algerine style. 12 pair of men's slippers. 12 pair, another sort, called Yamany. 12 pair, called Telemsany. 12 pair of men's Arab slippers. 12 pair of the same. 12 pair of the same, Kirwan style, made at Tunis. 12 pair of the same, made at Kirwan. 12 pair of ladies' shoes and slippers. 12 pair of the same, used for walking by ladies and those of Sahel. 12 pair of boots, yellow and red. 24 pair of ladies' coloured shoes. 12 pair of ladies' short coloured slippers. 12 pair of Arab and children's shoes. 10 pair of the same, with inner slippers. 6 red goats' skins. 6 black goats' skins. 6 yellow goats' skins. 6 chocolate goats' skins. 6 red goats' skins. 6 red sheep's skins. 6 yellow sheep's skins. 6 goats' skins, light blue. 6 white sheep's skins. 6 of the same. 1 leather bag, Persian style. 1 leather bag, Kaff style. 1 of the same. 1 powder and shot bag. 1 leather powder bag. 1 pair of pistol holders. 1 single pistol holder. 1 set of forehead ornaments, used by Arabs for horses.

13.—2 models of arabesque plaster ornaments, used for decorating the interior of Moorish rooms, beautifully carved.

14.—1 box of saffron.

15.—1 box of indigo.

16.—1 box of indigo, of another sort.

17.—1 box of the same.

18.—1 box of unwoven linen.

19.—1 large carpet. 3 small carpets, used in tents. 1 of the same. 1 of the same. 14 bags, for feeding horses. 8 horse coverings.

20.—8 carpets, used in tents. 7 carpets, used for wall tapestry. 17 carpet bags. 20 horse bandages.

21.—Specimens of leather:—5 red thin skins. 5 of the same. 5 red thin hides. 5 of the same, for shoemaking. 5 of the same. 5 white thin hides, for shoemaking. 2 pair of forks, used for the wool manufacture. 6 pair of copper stirrups. 6 pair of the same, used by the Arabs of Derna. 6 undressed goats' skins. 6 leather bags, for carrying water. 2 hair cords. 2 of the same, for tying horses' feet. 2 martingales. 2 hair girths, used for tying up loads on mules. 2 horse brushes.

22.—52 bornuses, woven with silk and wool. 88 Jewish garments, worn when at prayers.

23.—10 Jewish garments, worn when at prayers. 9 mantles, with silk and wool, made at Gerby. 17 mantles, with silk. 87 ounces of woollen thread, made at Gerby, for various manufacturing purposes. 56 ounces of spun thread, made at Gerby, for same purposes. 13 girths. 18 pieces for making joubbas, with silk, Gerby manufacture. 1 white piece, with silk. 22 Gerby shawls, with silk. 7 men's shawls. 1 complete white silk mantle. 1 complete black silk mantle. 3 coloured shawls. 1 mantle. 2 bornuses, silk and wool. 1 bornuse, of Gerid silk and wool. 5 Tunisian carpets. 3 horse bandages, manufactured by the tribe of Awlad-Un.

24.—1 box containing earth extracted from the mine of the Mountain of Slata.

25.—1 box containing minerals from the same place.

26.—1 box of mineral lead from the Mountain of Gerisa.

27.—1 box of the same.

28.—1 box of mineral lead from the Mountains of Wargha and Gerisa.

29.—1 box of the same.

30.—1 box of lead from Slata.

31.—1 box of iron from the same place.

32.—1 box of lead from the Ragba Mountains.

33.—1 box of copper and iron from the Mountain of Gerisa.

34.—1 box of the same.

35.—Piece of jujube wood. 10 untanned hides.

36.—1 mule saddle, complete. 2 horse saddles, complete. 10 horse leather bags. 12 stilettoes, manufactured at Biserta. 10 fans. 3 leather round waiters, to be placed under candles. 2 silk horse-neck ornaments. 2 cord bridles. 2 copper candlesticks. 12 pieces of coloured coarse cloth. 5 horse coverings, with stripes.

37.—8 parasols, with leather and silk. 5 parasols, with ostrich feathers. 33 parasols, various. 1 basketful of dry pommegranade, used for colouring yellow. 1 basketful of gall. 1 lion's skin. 2 leopards' skins. 1 weight for scales.

38.—Sample of lime.

39.—1 bale of wool, weighing 581 lbs.

40.—1 bale of wool, weighing 504 lbs.

41.—Two tin boxes, one of which contains—10 shirts, with silver embroidery, various colours and patterns. 1 shirt, crimson and pearl coloured. 1 shirt, pearl coloured. 1 shirt, crimson coloured. 1 shirt, silk, with silver. 3 head coverings, gaze, with silver. 5 of the same. 5 of the same. 1 pair of trousers, embroidered. 1 pair of trousers, called "The beauty coming out of her bath." 12 silk scarfs, with silver. 1 curtain, with silver. 1 scarf, with silver. 1 girth, with silver. 2 scarfs, with silver. 1 light-blue joubba, embroidered with gold. 1 of the same. 1 of the same, with gold and silver. 1 pair of trousers, with silk. 1 pair of trousers, silk, with mixed ornaments and silver. 1 pair of trousers, with silver. 8 silk shirts, with gaze, embroidered. 4 silk shirts, with gaze, without embroidery. 8 pair of trousers, silk, embroidered with gold. 1 pair of the same. 4 shirts, silk, embroidered with gold. 2 joubbas, silk, embroidered with gold. 7 women's jackets, embroidered with gold.

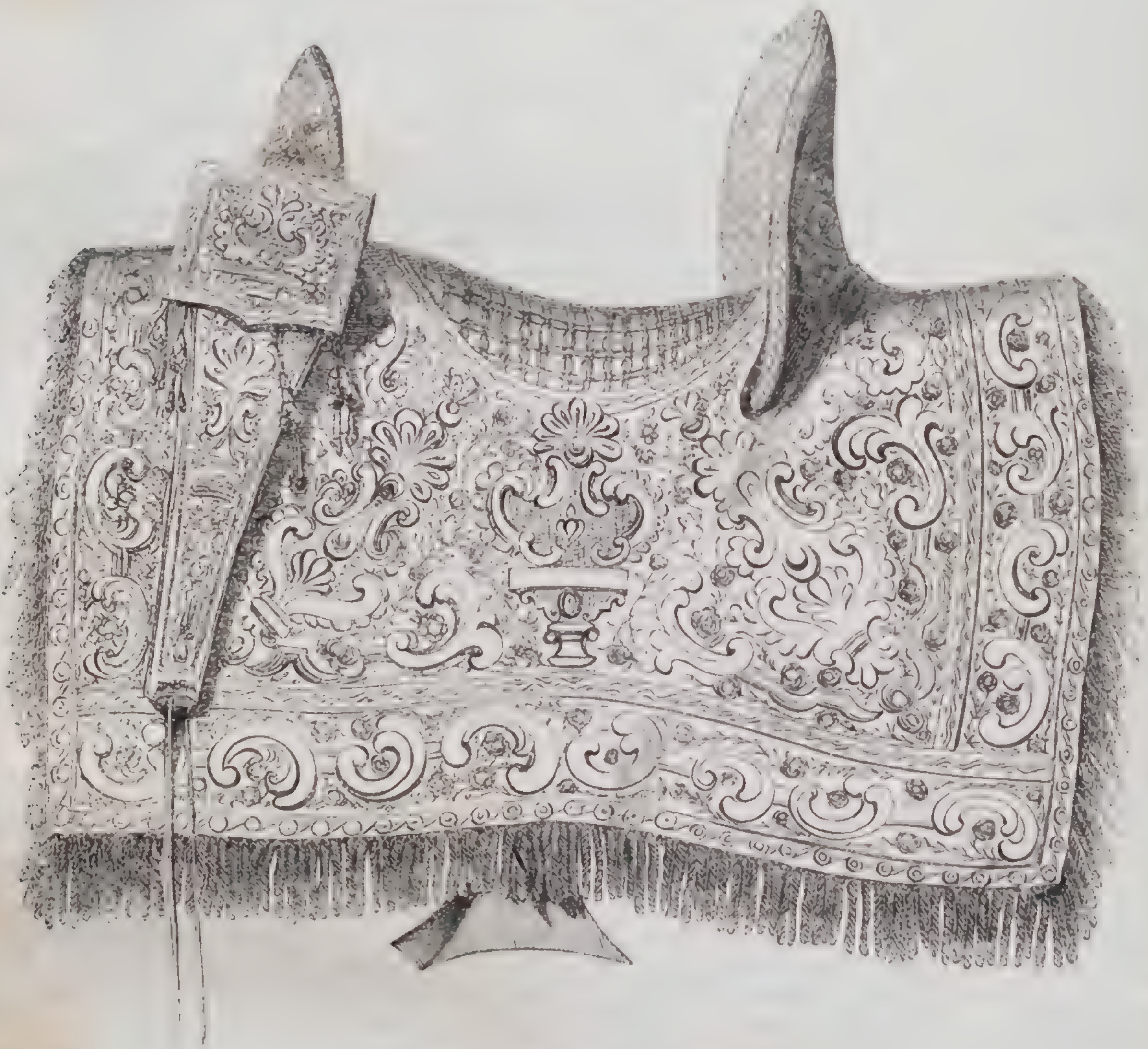
The other box contains—8 damask jackets, with silver. 1 gentleman's velvet dress, complete. 2 small cloaks, fully ornamented with silver. 6 long hair ornaments, with gold. 4 ounces of yellow silver. 1 ounce of white silver. 1 ounce of silver thread, yellow. 1 ounce of silver thread, white. 4 girths for ladies' trousers. 1 head covering, with silver. 1 head covering, gaze, embroidered with silver, &c.

42.—1 mule saddle, fully embroidered, without stirrups. 10 gentlemen's cloth dresses, with ornaments, in the Algerine style, silver and silk. 10 gold-embroidered ladies' shoes. Ladies' velvet shoes and slippers. 2 ladies' head ornaments, embroidered. 5 embroidered girths for trousers. 12 ladies' caps, with silver embroidery. 12 embroidered silk handkerchiefs. 12 kerchiefs, with silver. 2 arm ornaments, with stripes, in silver. 2 ladies' caps, in silver. 1 Jewish man's waist girth, with silver. 5 pairs of trousers, with silver. 4 ornaments for the back of the head, with silver. 6 silk leg girths, with silver. 6 silk guards for watches. 6 silk watch ornaments. 6 chaplet ornaments, with silver. 12 kerchiefs, with silver. 2 dozen kerchiefs, smaller size, with silver. 2 tobacco bags, with silver. 8 silk bags, ornamented with silk and coral. 1 Jewish lady's girth, with silver.

And in the second box—1 mule saddle, fully embroidered, without stirrups. 6 head girths, with gold thread. 9 gentlemen's dresses complete, various designs, Algerine style. 3 breast embroideries, for ladies' dresses. 12 silk shawls, with gold. 12 ladies' dresses, with silver. 2 waist girths. 1 large scarf, with silver. 1 large waist girth, with silver. 12 kerchiefs, with silver. 1 curtain, with silver. 1 curtain, plain. 1 scarf, with silver. 1 piece of silk stuff. 6 tobacco purses, with silk and coral embroidery.

43.—1 beautiful saddle, fully embroidered with gold. This saddle is represented in the cut below.

1 of the same, less embroidered. 1 box containing 10 coral chaplets, with gold ornaments. 10 cloth bornuses. 6 cloth joubbas, with gold embroidery. 4 cloth joubbas, with silk embroidery.



Ornamented and Embroidered Tunisian Saddle.

44.—10 Algerine men's dresses complete, with silk. 2 long jackets, with silver. 7 long jackets, with silk. 1 crimson and light-blue girth, of Gerby manufacture. 8 short jackets, with silk.

45.—1 box containing lead from Dgebba, and one stone, called keddal, used for making lime, &c.

46.—Saltpetre.

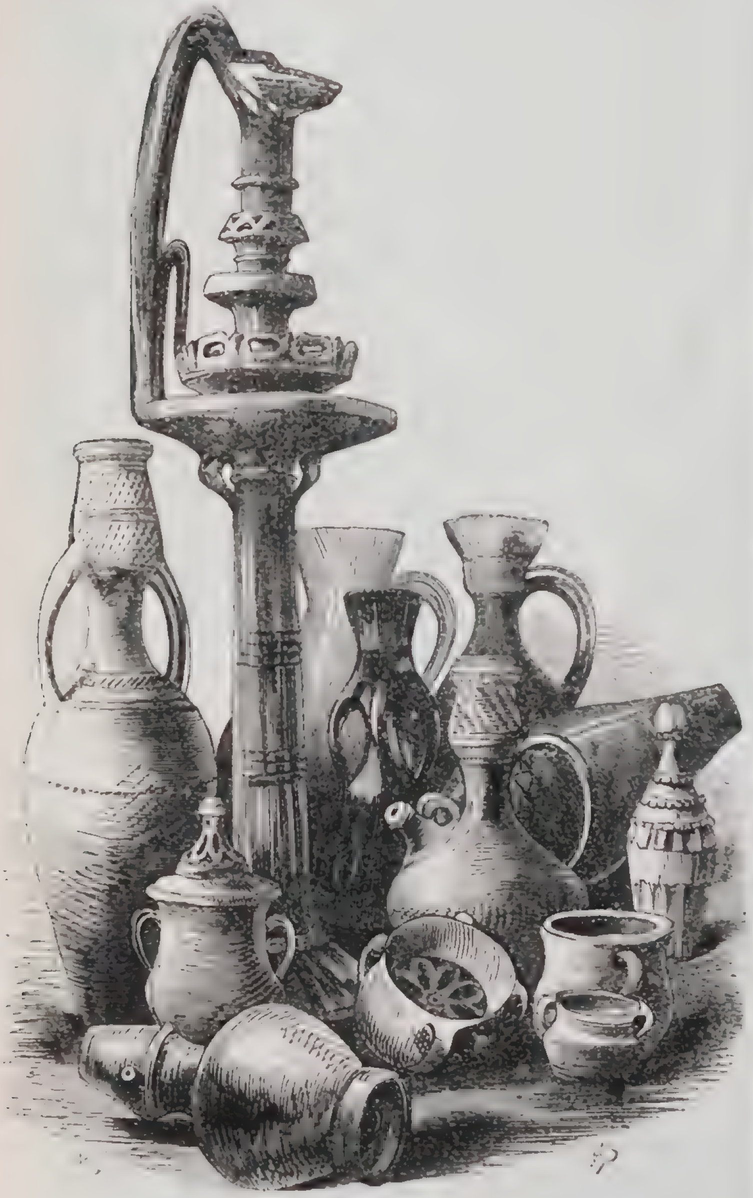
47.—99 Jewish religious garments. 11 girths. 10 mantles, silk and wool, Gerby manufacture.

48.—19 pieces for making bornuses. 11 Gerbine mantles, with silk, 16 pieces for making joubbas. 10 pieces, coloured and white joubbas, 4 pieces of yellow, and 9 pieces of different patterns, 3 pieces of Gerid manufacture, 1 piece, small. 3 bornuses, complete. 5 of the same, of Gerid manufacture. 1 Gafsa, of the same manufacture. 3 Gerby, the same. 4 pieces for joubbas. 27 Gerbine blankets.

49.—Weeds for smoking pipes.

50.—Gypsum, of the finest and inferior qualities.

51.—Domestic implements, viz.: 6 copper jugs. 2 copper waiters, and 2 of the same, used for dinner-service. 1 fish casserolle. 2 large boilers. 1 bucket. 22 Arab and 3 Turkish wash-hand basins. 10 earthen cups, used for drink. 6 boxes, used as soap-holders in bathing. 6 vases, used for throwing water upon the head in bathing. 10 covered casserolles. A group of these objects is represented in the annexed cut.



Domestic Implements of Tunis.

52.—1 large copper boiler. 5 wash-hand basins. 2 fish and other casserolles. Various sorts of buckets. 1 basket, with dried raisins. A sample of a material used for tanning.

53 to 57.—5 boxes, containing 90 bottles of different sorts of scented waters.

58.—An arm-holder to hang up guns.

59.—A carved and inlaid door, with a curious key. (This door is represented in the annexed illustration.)

60.—Wheat, called Hemira.

61.—The same, called Azyzy.

62.—The same, called Ngida.

63.—The same, called Sbihy.

64.—The same, lightly roasted when new, used for soups.

65.—A jar containing prepared barley, for soups.

66.—A jar containing Koskossoo, a dry preparation of the Semola.

67.—A jar with barley.

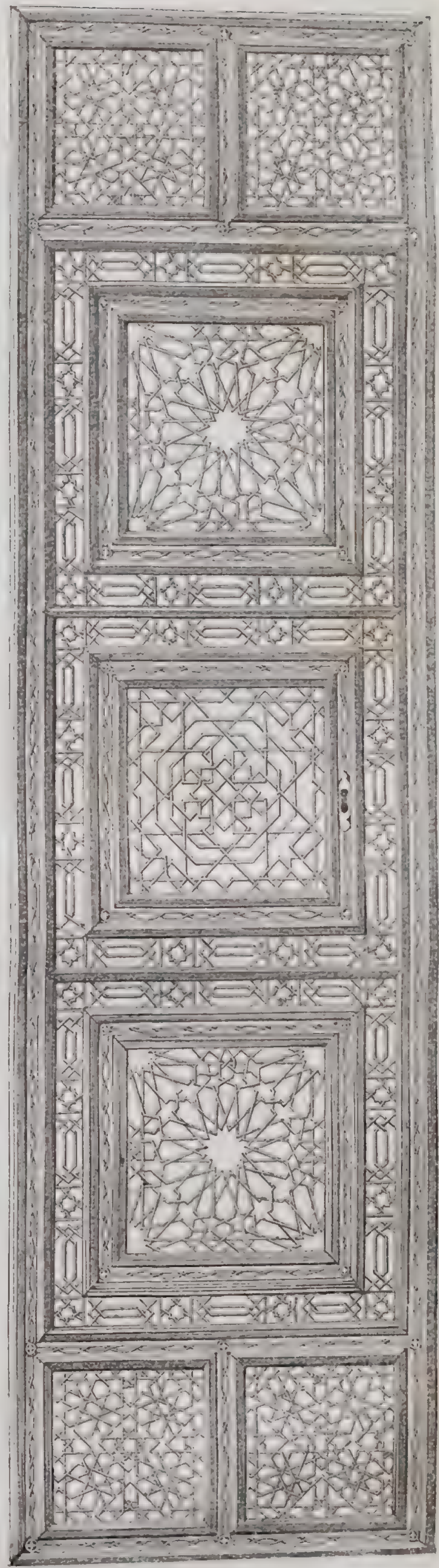
68.—A jar containing preserved olives.

69.—A jar with wheat called Mahmovdy.

70.—A jar with mohammes, a dry preparation of the Semola.

71.—A jar with Koskossoo.

72.—A jar with barley.



Carved Door.

73, 74, 75.—Sponges.

76.—Dried apricots.

77.—Two pieces of white cloth.

78, 79.—Dates, produced at Gabes, and dates in leather bags.

[The date tree of the East belongs to the natural family of the Palms. This fruit forms a not less important article of food to Eastern nations than wheat or other cereals to ourselves.—R. E.]

80.—19 Gerby blankets. 7 Arab mantles. 13 shawls. 4 blankets, 1 of Tunisian manufacture.

81.—25 bottles of Begia snuff. 1 bottle of ink.

82.—31 Arab tents. 14 bags for feeding horses, used by Arabs. This tent, with a number of native agricultural implements, weapons, water-holders, &c., is represented in the illustration on the next page.

83.—1 velvet saddle, embroidered with gold, and 1 embroidered with silver. 2 plated stirrups, used by Bedween Arabs. 2 iron bridle pieces, of different sorts. 7 water-holders, used on horseback, embroidered with gold, &c. 6 gun locks, with silver and copper. 2 gold foot-rings. 2 bracelets. 4 lizard skins. 1 complete Arab belt, &c. 2 smoking pipe-guards, embroidered. 2 leather cushions. 1 hatchet. 1 scythe. Arab bracelets, with silver. 5 foot-rings for girls. 1 ring, used by Arabs to tie up their waist-girths. Various Arab bracelets, of silver, &c. 2 pair of foot-rings, silver, 2 Tripoline style. 2 pins, 2 ear-rings, the same. 1 pair of pins and breast ornaments. 2 ear-rings. Another sort of Arab breast ornaments. 1 pair of gun locks, with Arab ornaments. 1 silver breast-ring, with which Arab women tie their joubbas. 2 silver ornaments for the head. 1 boy's belt. 1 looking-glass, as used by Arabs, and other silver ornaments. (A group of these ornaments is shown in the adjoining illustration.) Specimens of essences, &c. 11 meticals Tunisian otto of roses. 12 of the same, jasmin. 12 of the same, mixed essences. 11½ of the same, quinces. 11 of the same, of the white rose. 10 of the same, of Benjamin. 11 of the same, of oranges. 13 of the same, of essence of aloes. 12½ of the same, of essence of apples. 11¼ of musk. 500 amber lozenges. 300 of the same. 5 amber necklaces. 2 ounces of pomatum, made with musk and aloes. 5 of the same, jasmin. 2½ meticals of otto of jasmin. 4 ounces of saffron. 1 complete bornus, of Gerid.

84.—Specimen of the Karouba tree. 25 lbs of dried figs.

85.—Henna leaves; and in powder.

86.—A well-block. 5 sieves, of different sorts. 1 Turkish pike, or measure for cloth. 1 Arab, of the same.

87.—4 parasols, with ostrich feathers. 2 of the same, in red silk. 12 ladies' shoes. 9 gentlemen's slippers. 35 ounces of cord. 25 ounces of thread. 3 sieves.

88.—10lbs. ready-cut smoking-tobacco. 10lbs. in leaves. 10 lbs. of Begia. 10 lbs. of Toborsook. 10 lbs. of Korba. 10 lbs. of Abidy. 10 lbs. of Aithy, for snuff. 1 bag, with hay seed.

89.—Jars, with pickled raisins and meat.

90.—Jars, with sausages, raisins, and meat.

91.—Lime. 1 jar, with gunpowder.

92.—6 lions' skins. 2 leopard skins. 1 small black skin, in pieces. 2 boxes, with ostrich feathers. 1 skin of a wild sheep.

93.—1 saddle, embroidered with silver and gold. 2 silver stirrups, for mules' saddles. 2 silver chains, for mules. 5 pair of home clogs, embroidered. 2 belts. 1 embroidered cushion.

94.—Gentlemen's full dresses, embroidered with gold. 2 breast embroideries, for ladies' dresses. Tobacco-bags, of various patterns, embroidered. 7 comb-guards, embroidered. A beautiful specimen of a complete Moorish belt. A general-officer's belt. First, second, third, and fourth rank civil officers' belts. A major's belt. A lieutenant-colonel's belt. 6 under-caps. 2 pairs of woollen stockings. 1 pair of slippers. ½ lb of k-hol, a collyrium, used for blackening the eyelids.

95.—1 box, containing a round piece of worked marble.

96 to 100.—5 pieces, being various sorts of timber from Tabarca. 1 piece of cypress wood.

101.—1 box, containing garlic, and red and ground pepper.

102.—Haricots. Droâ, a grain much cultivated at Tunis.

103.—Fenugreek. Chick peas. Lentils. Black haricots.

104.—Beans. Carroway. Gämmam, much used for dyeing. Coriander.

105.—Pistachios.

106.—Bamia, and other seeds.

107.—Dry Muscatelle raisins. Hard almonds.

108.—Another sort of almonds.

109.—Dry raisins. A paste made with raisins.

110.—Seeds of various sorts.

111.—Mloukhia, used for cooking, in leaves.

112 to 134.—Boxes, containing various sorts of dates, in baskets.

135.—Pomegranates.

136.—Medicinal herbs, produced in the regency.

137.—One box, with tanning materials. Ground mloukhia and cotton. 2 scissors, used in the red cap manufacture. 19 large spinning spindles. 9 smaller spinning spindles. 2 hair sieves. 5 plate covers, made by the negroes. 25 of the same, smaller. 1 junk waiter. Some swak, used by Moorish women for whitening their teeth.

138.—29 small bundles of swak.

139 to 148.—627 pieces of common earthenware, of Nabel and Gerby.

149.—2 jugs, with red Gafsa pepper. The same, of Nabel manufacture. 1 basket of common salt and impure soda.

150, 151.—2 boxes, with sponges.

152.—25 bottles of mineral waters of Hamman Ellen'f, near Tunis.

153.—22 bottles of the mineral waters of Korbus.

154.—Preserved fish.

155.—4 jars of honey.

156.—2 jars of preserved olives.

157.—Various sorts of preserved fish.

158.—Preserved raisins.

159, 160, 161.—Jars of olives.

162.—4 jars of salt butter, and 10 smoking pipes.

163.—4 jars of honeycombs.

164.—A comb and a well-block.

165.—Common salt.

[Sir G. Temple remarks of a saline district in this regency, that he found a considerable area covered with a compact unbroken mass of salt of considerable depth. In some parts it was so hard as to baffle all attempts at breaking its surface, except with a pickaxe. He adds, "The salt is considerably weaker than that of the sea, and is not adapted to preserving provisions, though its flavour is very agreeable."—R. E.]

166.—Gypsum.

167.—1 millstone.

168.—Building and lime stones, and bricks.

169.—Common dark gypsum, used for building.

170.—Gypsum, not entirely macerated, used for building mills, &c., as a very strong cement.

171.—Best gypsum, called Naksha, for making arabeques, and other ornaments.

172–176.—Hard soap, of various sorts.

178, 179, 180—Junk and straw works, common mats, mats used at prayers, bucket-covers, straw saddles, bags for putting on camels, horses, &c., and agricultural implements.

181.—Goat's hair.

182.—Cow's hair.

183.—50 lbs yellow wax.

184.—Junk mats.

185.—50 lbs of tallow.

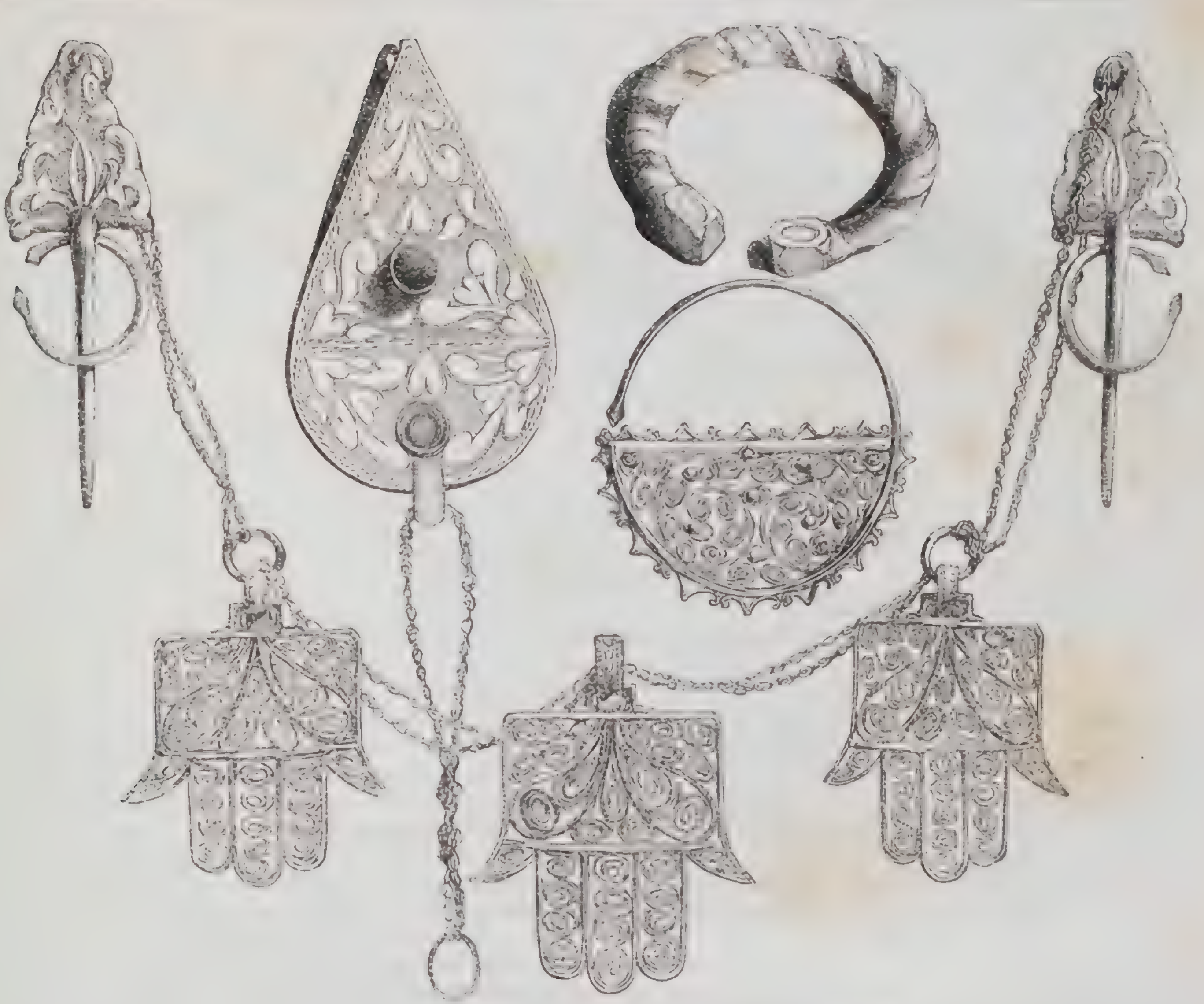
186.—An ostrich's skin.

187.—10½ metals of oil, called Beldy.

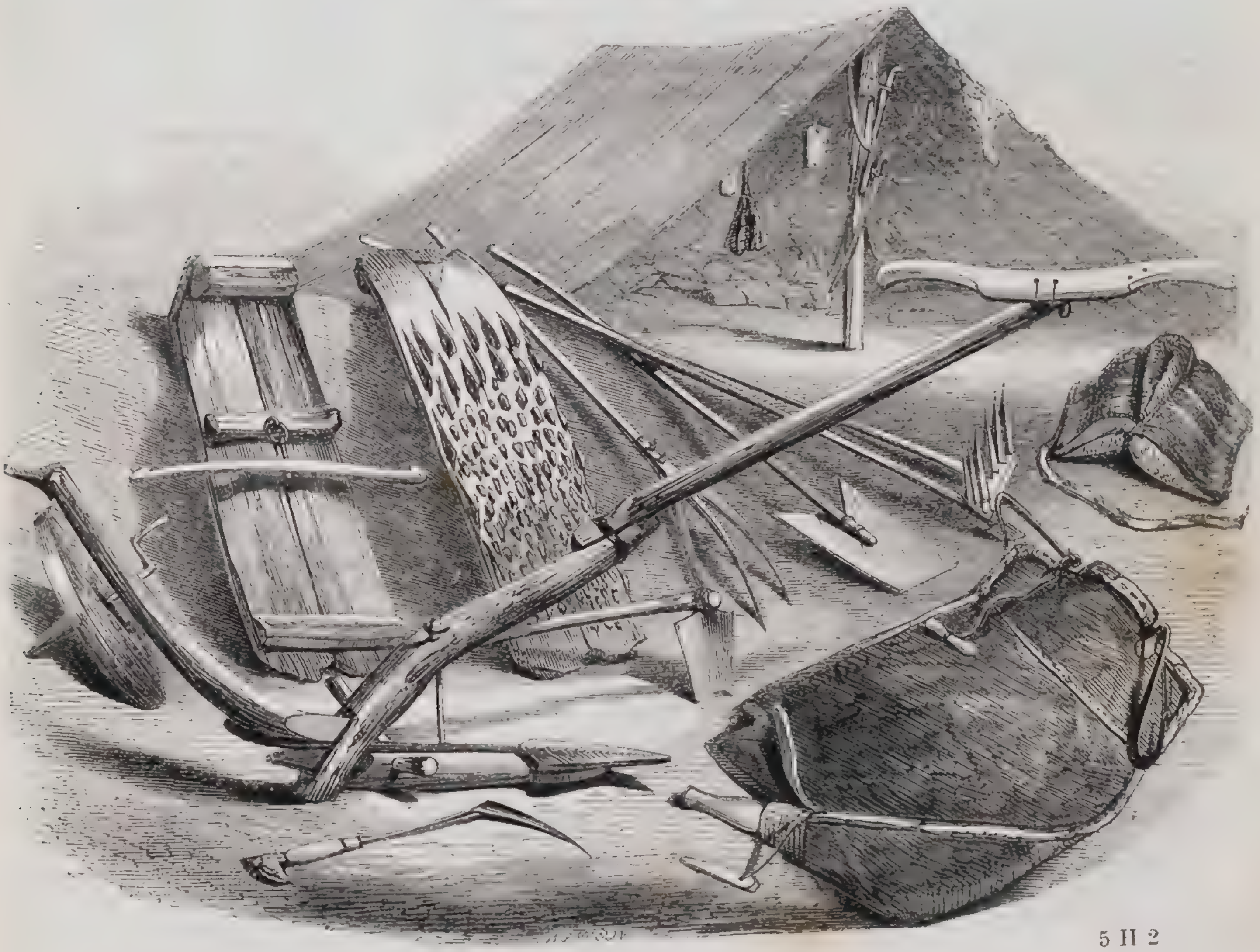
188.—10½ metals of oil, called Darbma.

189.—345 lbs of soft soap.

A bale (152 lbs) of camel's hair.



Specimens of Tunisian Jewellery.



Arab Tent, Weapons, Implements, &c.

CHINA

East of Transept, L. M. 40, 41; N. O. 40 to 42.

A very interesting collection of Chinese productions and manufactures, with a few from Japan, has been formed by the contributions of about forty exhibitors, comprising various articles which belong to different classes. The attention of those connected with raw materials will be directed to the substances employed in the manufacture of porcelain at the Great Porcelain Works, in the vicinity of the Pozang Lake. The animal and vegetable materials employed in native and European manufactures, as hemp, cotton, silk, &c., are also exhibited. There are also some chemical preparations, as arsenic, sulphate of iron, &c., which recal the historical fact of the early development of chemical knowledge among the inhabitants of China. Among the articles used as food the varieties of tea are extremely interesting. The means of colouring teas are also represented by a bottle of the materials employed. It might be advantageous to analyse a portion of the contents of this bottle, with a view of ascertaining the presence or absence of any noxious ingredient. It is now a fact, beginning to be widely known, that the green colour is merely an adulteration, and not the natural tint of the leaf. The edible birds' nests will also receive notice. Those characteristic productions of China, the great porcelain vases, jars, and other vessels of this material, are illustrated by some fine specimens. The lanterns, screens, elaborate carvings of every description, the lacquered and japan ware, paintings, and other articles, which had long been known to our merchants, and which recent commercial intercourse has brought to our doors, are here exhibited. Among other objects of interest is an address presented to the deputy-governor of the province of Canton. This address measures nearly eight feet long and is six feet wide.—R. E.

1 H. M. Consul Shanghae, contributed through the Board of Trade—Producer.

Specimens of some of the raw products of China, which may possibly be made available ultimately as exports, and in the mean time be objects of interest, furnishing means of comparison with similar products of other countries.

The following, it is thought, may be found worthy of some attention as objects of interest, if not of immediate utility.

No. 28, The red copper from Japan; No. 20, The vegetable wax, as it is termed, but the produce of an insect it is believed, which lodges in the tree; No. 22, Specimens of varnish for which the Chinese are justly celebrated; and No. 14, A product styled coarse silk in the list furnished, but supposed to be the fibre of a species of cactus.

1 Gallingal, a Chinese root (*Leangkeang; Alpinia Sp.*)

2 A red colour.

3 Saffron (*Hunghwa*). Produced in Szechnen and Hookwang.

4 Camphor (*Chungnaon; Camphora officinarum*). Found at Taushwuyand and Formosa. A very good species of camphor comes from the Japanese islands, called "changping."

5. Rhubarb (*Tahwang*). From Szechnen.

6 Hemp (*Yuma*).

7 Uncleaned cotton (*Meenhwa*). Grown in the valley of the Yangtze Kiang.

8 Cleared cotton (*Hwae*). 9 Hemp seed.

10 Tobacco, very generally grown.

11 Coarse hemp (separate package in matting).

12 Hemp twine. 13 A Chinese medicine root.

14 Coarsest raw silk. Produced in Hae-nan. Supposed to be the fibres of the cactus, and a very singular product.

15 Turmeric. From the straits Fuhkien, Formosa, and Kwangtung.

16 White arsenic. From Hankow.

17 Arsenic. From Hankow.

18 Yellow arsenic.

19 Bees'-wax, white and yellow.

20 Vegetable wax. Produced in Szechnen.

21 Sulphate of iron (green vitriol).

22 Three bottles of varnish. Produced at Hwuy-chow foo and Yeu-chow-foo, in Ganhwuy.

23—27 Fused metal. Supposed to be mixtures of white and yellow copper.

28 Japanese copper.

2 The Great Porcelain Works of King-tih-Chin," *in the vicinity of the Poyangdale*—Producer.

A complete collection of the various materials employed in the manufacture of porcelain.

1 Waukuh (literally skeleton of the cup).

2 Tsei-he. Porcelain may be formed by a mixture of the above.

3 Material ready mixed. This made with water into clay will form porcelain.

4 Bedaubing powder, ready mixed.

5 Soap-stone, very hard. Found in the districts of Luh-siu and Kweihe, in Keangse province. The best material is formed by a mixture of this earth with Kemun clay (*a*), at the rate of 4 lbs. of the latter, to 13⅓ lbs. of the former.

6 Bedaubing material. To make this material of a superior quality, add to it No. 4 powder at the rate of 2 oz. to each 1⅓ lb.; to make it of a medium quality, add 2¾ oz. to each 1⅓ lb; and to make bedaubing material for inferior china, add as much as 4 oz. of No. 4 powder to each 1⅓ lb. of the material. To each 1⅓ lb. of this material, add also 4 oz. of the soap-stone (No. 5), make the mixture up into a paste, and bedaub the porcelain before baking.

7. White lead.

(*a*) This stone is produced in the Kemun mountain, at Hwuy-Chow Gauhwuy province. The best kuh is made of it.

(*b*) This earth is called kaouling (ka-o-lin).

[It is found in the eastern part of Fowleang district, in the department of Taou-Chow Keangse province. It is dug out of the mountains, and moulded into pieces, after scouring and sifting in water. It is a very hard earth. A clay is made by a mixture of three bricks of this, with two bricks of the tseihe.]

(*c*) Tungkeaug-stone. Found in the King-tih'-Chin district. Makes the best kuh.

(*d*) This earth is found in the southern part of Fowleang district, in Keangse, at a place called San-paowfung. It is naturally soft, and is made into clay by a mixture with the kaouling (*b*).

(*e*) Mixture of kaouling-earth (*b*) with yukau-earth (*h*), at the rate of two bricks of the latter to three of the former.

(*f*) This large piece is a brick of earth called Kweihe, found at the Pang-pe-wau mountains, in a district of that name. It is first pounded, then ground into a fine powder, and after being cleansed by washing from all impurities and dregs, it is made into clay and moulded into bricks. It is rather a hard earth, and is used mixed with a softer earth; one brick of each.

(*g*) No description attached.

(*h*) Yu-kau stone, makes kuh (No. 1) of medium quality.

(*i*) This gold must first be mixed with white lead and cowhide glue, and then painted in the porcelain.

Colours:—

Twenty-three packets, containing prepared colours of various kinds. After grinding fine, mix the powder with pure water; draw off from the sediment, and the colouring is ready for use.

8—17, 19, 21—24, 29 Different shades of blue.

27 Inferior pea-green. 28 Green.

18, 20, 25, 26, 30 Shades of black.

Forty-seven packets, containing colours for painting the best porcelain after baking:—

31 Yellow ochre. To be ground very fine and made up with water; used for bedaubing the surface of the porcelain.

32 Light brown, and 33 Reddish brown. To be similarly prepared.

34 Canton blue. To be ground very fine, and made up into a consistency with water. Used for ornamenting the porcelain.

35 Pale sea green. Similarly prepared.

36, 37 Ash greys. Prepared and used as No. 31.

38 Light green; 39 Puce yellow; 40 Pea green. Prepared and used as No. 34.

41 Snow white. To be ground fine, and mixed into a consistency with water.

42 Coarse dark red. Similarly prepared.

43 Coarse white. After grinding very fine, add to the powder 7½ oz. of white lead, and make it up into a consistency with water, after which, add another 1⅓ lb. of white lead.

44 Superior green. After grinding fine, add to the powder 7½ oz. of white lead (per 1⅓ lb.), and mix into a consistency.

45 Coarse superior yellow. After grinding, add 4½ of white lead, and mix into a consistency.

46 Blue. After grinding fine, add 8 oz. of white lead, and mix into a consistency.

47 Canton blue. To be ground very fine, and made up into paste.

48 Foreign white; 49 Coarse glass colour; 50 Superior white; 51 Coarse superior white. All to be similarly prepared.

52 Dark red. Add 5 oz. white lead.

53 Medium red. To be mixed with water into a consistency.

54 Pink. To be ground fine, and made into a consistency.

55 Coarse foreign snow white. After grinding very fine, add 4½ oz. white lead, and mix into a consistency.

56 Coarse superior moon white. After grinding very fine, add 4 oz. of white lead, and mix into a consistency.

The eleven preceding are used for ornamenting.

57 White. To be ground very fine, and made up into a consistency. Used for painting birds' beaks.

58 Superior moon white. To be ground very fine, and made into a consistency.

59 Foreign yellow; 60 Glass white. Similarly prepared.

61 Earth clay. To be mixed with glue, and oil of gum benzoin.

62 Coarse superior cedar-green. After grinding fine, add 4 oz. of white lead, and mix into a consistency.

63 Coarse superior green. After grinding, add 7½ oz. of white lead, and mix into a consistency.

64 Pale green. To be ground fine and mixed into a consistency.

65 Superior pale green; 66 Pink; 67 French blue; 68 Rouge; 69 Fine foreign cedar-green; 70 Superior grey; 71 Superior yellow. All similarly prepared.

72 Coarse foreign cedar-green. Prepared with the addition of 4½ oz. of white lead.

73 Foreign coarse grey. Prepared with the addition of 9¼ oz. of white lead.

74 Best pale blue. Prepared without the white lead.

75 Coarse foreign yellow. Prepared with the addition of 4½ oz. of white lead.

76 Coarse foreign green. Prepared with the addition of 9½ oz. of white lead.

77 Coarse foreign white. Prepared with the addition of 2½ oz. of white lead.

The eighteen preceding articles used for ornamenting; Nos. 57 *and* 61 being exceptions.

[It is much to be regretted that no chemical analysis of these colouring substances has yet been made. The peculiar excellence of the Chinese porcelain consists not less in the brilliancy of the colour than in the beauty of the material. The opportunity for such an analysis would appear now to present itself, and the result might be attended with important benefits to the porcelain manufactories at home.—R. E.]

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3 MISCELLANEOUS OBJECTS:—

1 A large cameo basso-relievo on yellow ground, in coloured stones, representing a group of flowers and animals. This art is said to be lost in China in the present day.

2 & 3 Two large basso-relievos on blue ground, representing horses in various postures, trees and shrubs in stones and in sculptured wood. Said to be of the last century.

4—7 Four basso-relievos on blue ground, representing flowers, shrubs, &c.

8 A lacquered table, with incrustations of mother-of-pearl.

9 A similar table.

10—13 Four lacquered chairs, inlaid with mother-of-pearl.

14—17 Four lacquered chairs, inlaid with mother-of-pearl. These tables and chairs are reported to have been pillaged from the Treasury of Kienbung, in the wars between the Chinese and the Tartars.

18 A square brazeiro and pedestal, for heating a room by charcoal ashes, or the burning of incense; bronze enamelled. Said also to have been taken originally from the Treasury of Kienbung, and dating two centuries back.

19 A censer, or perfume urn, in which perfumed incense is burned to ancestors: enamelled bronze with dragon handles.

18 & 19A Pedestals in sculptured wood, appertaining to the enamelled censers. The wood termed eagle-wood is very rare and much esteemed in China.

20 & 21 Two candelabra in bronze, enamelled in mosaic pattern.

22 A bronze vase, mosaic enamelled, with cover and pedestal in carved wood.

23—27 Ornaments of a Chinese table, consisting of two candlesticks, two vases and a censer vase, in enamelled bronze and mosaic, with stands of carved wood.

28 A Chinese sceptre, inlaid with silver and gold, carved.

29, 30 Two boxes of carved red lacquer-ware, from Sutchuen.

40 A tableau in carved wood, and of a single block of wood, representing rocks, the sea, ships, trees, &c., and said to be considered a *chef-d'œuvre* by the Chinese.

41 Antique vase of enamelled and mosaic bronze, with pedestal of carved wood.

42 & 43 Two vases of bronze inlaid with silver, and the handles represented by the wings of birds, with carved wood pedestals.

44 Sideboard in carved wood, edged with ebony, and incrusted with ivory, with eight elaborately carved panels in yellow wood, representing trees, fruit, and animals; of modern manufacture.

4 THE HORTICULTURAL SOCIETY, *London*—Producer.

1 Specimen of indigo, the produce of plants in the north of China.

[The indigo plants are called botanically *Indigofera tinctoria* and *cerulea;* they are extensively cultivated in India and the East for their valuable dye. Other species of *Indigoferæ* yield this dye, but those named are the most esteemed for this purpose. It does not appear whether the specimen in question is yielded from the ordinary or from some new sources.—R. E.]

2 Specimens of the raw produce of the silk-worm, from Leotang, in Manchouria.

3 Specimen of the fabric, manufactured in the same province for home consumption.

4 Another specimen of the same fabric.

5 THE HON. EAST INDIA COMPANY—Producer.

Hemp-palm; its fibre, and the ropes prepared from it. This palm grows in the province of Chekiang and Kiangsu, is very hardy, and of great value to the Chinese. It is thought that it may also be hardy in England.

Arrow-root from the nelumbium; two kinds in bottles.

Tung-oil seeds in spirits (*Elæococca oleifera*); one bottle.

Tung-oil expressed from the seeds; one bottle. This is a valuable wood-oil, much used for boats, furniture, &c.

The whi-mei of the Chinese, said to yield a green dye, and to be brought from the province of Shan-tung; one bottle.

Gardenia radicans (fruit), a yellow dye, much used in colouring furniture. It is boiled up with a small portion of glue, and rubbed over the wood, which is then oiled with tung-oil; one bottle.

Fortunæa Chinensis (fruit and flower), furnishes a dark brown dye, largely used in the Eastern provinces; grows on the hills of the province of Chekiang; one bottle.

The ko-pal of the Chinese, said to yield a dark or black dye, and to grow on bushes in the western provinces; one bottle.

Shanghae indigo, made from Isatis indigotica, extensively used in the north of China; one bottle.

Pith of the plant from which rice-paper is cut, said to grow on the island of Formosa; one bottle.

Wax tapers used at Peking.

Brick tea (two samples).

Green-tea dyes; articles used in the district of Hung-chow to dye green tea for exportation; one bottle.

6 SHEA, Captain, 31 *Connaught Square, Hyde Park.*

1 A snuff-box; specimen of Chinese carving on English cannel coal, the only specimen known.

[This was sent by the exhibitor to Canton, in 1827, to be carved, but in consequence of the Chinese fancying it impossible to carve from its being of coal and so brittle, it was brought back again; but in 1833, the exhibitor took it himself, and by persuasion induced the Chinese to make a trial of one corner of it, which was done so much to the exhibitor's satisfaction, that he desired it to be taken to the carver, who in a fortnight returned it finished as now exhibited, the cost being 8 dollars, or 2*l.* sterling. It is said to be the only specimen of Chinese carving on coal in existence.]

2 Two Chinese carved mother-of-pearl shells.

3 Two specimens of Chinese enamel on copper.

4 A small saucer; specimen of Japanese lacquered ware. This saucer is made of wood celebrated for its lightness, and lacquered with a peculiar kind of lacquer that will stand a great heat.

5 A cup and saucer, specimen of Japanese lacquered ware, inlaid with green and gold, &c., on a dark ground, said to surpass any Florentine or Roman work, and remarkably light.

6 A specimen of Chinese cloth made of paper, and intended to represent mosaic work. The art practised by only one family at Amoy, in China.

7 A Burmese vase; material bamboo, elaborately carved.

[This vase is formed from the pines of the bamboo tree, and from its surface being ruddy, requires great caution in carving it true.]

8 A sandwich table, and two japanned chairs; specimens of Chinese upholstery and lacquered ware.

[One of these chairs is made from a pattern by Seddon; the arm-chair made to correspond by a Chinese. The ornamental part is different on every chair. The colour and lacquering have not faded, although they have been in use in England for sixteen years. The green damask on the seats is from one of the articles in No. 11.]

9 Two bamboo chairs; specimens of Chinese cottage upholstery.

[These chairs are rude specimens of Chinese cottage upholstery, and show to what use the bamboo may be converted.]

10 A Chinese lantern; figures on the silk; panels attached by wires, and moved by air or heat. This lantern is one of a pair from which the large one exhibited at the Chinese Collection was copied by Mr. Dunn, an Englishman attached to that establishment.

11 Specimen of green and crimson Chinese damask, of fast colour and superior texture. Made to order of the exhibitor.

[These specimens were made of a superior texture and of a particular colour, by order of the exhibitor. Similar pieces have been in use in the exhibitor's house for the last nine years in London, previously laying by for three years, having been in use two years before; notwithstanding this, their original colours have scarcely failed.]

12 Specimens of China ware, transparent:—One Chinese cup, remarkably white, with Chinese antique characters on it. Two small octagonal bowls, painted inside and outside; cover of the same. One thick cup and saucer, with gilded pattern. One other cup, saucer, and cover; painted blue inside, but quite transparent. A brown earthenware teapot, imitated as if cracked, with squirrels crawling out at the sides.

An empty hen's egg shell, pierced with seventy holes, about the size of a pea, in imitation of the Chinese ivory balls, by J. W. White, Esq., of Montague Square.

7 Reeves, J., Esq.—Producer.

A tea-chest containing 8 silken canisters of fancy tea; specimens in glass case.

Sixteen cakes of China ink, exhibiting thirty-two views in the Hwang Shan, or Yellow Hill, in the province of Keang Nan.

Ten cups of white porcelain. The mode of manufacture of this ware is said to be lost.

Twelve upright China cups.

Two metal tea-pots lined with earthenware and sundry-shaped China ornaments.

Eight tin cups lined with porcelain. Two bamboo carvings of birds. Case containing a boat carved in bamboo. Two bamboo carved penholders. Case with ten boxes of Fychow ware. Case with two boxes of the same. Chinese hooka. Four various-shaped tea-pots, metal lined with earthenware. Two carved steatite ornaments. Two carved cups. Three incense-burners in stone. Various Chinese tea-pots and tea-kettles in earthenware.

Tea-kettle and fire-pan; the straight air-holes exhibit the eight kwa, or diagrams of To He.

Oven heated by the flame of a lamp passing into the centre.

Oven to keep tea warm, being immersed in a vessel of hot water.

8 Reeves, J. R.—Producer.

Bronze vases, &c., inlaid, three large and five small.

Ink; one large box.

Sale ornaments; case of three.

Waistband buckle.

Filigree silver necklace.

Rolled paintings; set of four, one pair and one single, and one set of eight in black and white.

9 Hewett & Co., 18 *Fenchurch Street, London*—Importers.

Specimens of China ware:—

Jars from 10 inches to 4 feet high, beautifully painted, with handsome flowers, each pair being of a different design.

Sugar jars and covers. Sets of jars and beakers, five in a set. Plates, of various designs. Curious jars, 24 inches high. Toilet set, complete. Punch-bowl, very large, painted. Flower-pots and stands. Garden-seats, tiles, and fountain. Figures for burning pastiles. Eggshell cups, covers and saucers; tea-pots; flower-boat.

Specimens of carved ivory ware:—

Work-box, a fine specimen of carving.

Set of very large chessmen or balls, a fine specimen. Two sets, smaller and solid.

Very large ball, containing twenty smaller balls; all carved from one piece of ivory.

Vases. Card baskets, case, and racks. Cigar box. Fan. Paper-knife. Work-basket, with handle. Model of a junk.

Articles in lacquered ware, &c.:—

Pole fire-screens. Nest of four tables. Work-table, with carved ivory fittings. Cabinet. Tea caddy. Cabinet, red lacquered, from Loo Chow. Reclining chair made of bamboo. Seats, marble tops, and wood frames. Panels for cabinets, wood, inlaid with wood. Tray for burning joss stick.

Specimens of Japanese ware:—

Writing desk. Box. Work-table and box. Cabinet. All inlaid with mother-of-pearl.

Miscellaneous articles:—

Skin rug. Model of Chinese summer house. Swan-pan, or calculator. Cane blinds. Umbrellas. Lady's shoes. Curious bamboo jacket. Embroidered satin apron. Embroidered satin counterpane. Printed glass lanterns, carved ebony frames. Paintings on glass. Oil paintings. Gongs. Box of toys. Paper and feather fans. Hand-screens, various, including painted feathers. Specimens of bronzes, floor matting, beautifully-painted paper-hangings, and soap stone. Screen, carved slate, in wooden frame. Screen, painted porcelain, in wooden frame. Screen, composition of rice, also in wooden frame. Musical instrument. Mirror, in carved ebony stand. Carved mother-of-pearl shells. Balloon and revolving lanterns. Carved tortoiseshell combs. Silver filigree card-case and needle-case. Carved wood summer house. Chinese fruit, called lé ché, from the province of Fokien.

Articles in enamelled copper:—

Jars, 3 feet high.

Censer, cups, covers, and saucers.

Toilet set, complete.

Painted glass screen, with five leaves, five feet high, in carved ebony frame.

Embroidered Mandarin's dress, cap, and boots, with fan, chop-sticks, purse, and the various appendages of a Mandarin of rank.

Mother-of-pearl temple, with silver filigree, fruit, gold trees, &c., in glass case.

Large screens, with raised crape figures.

Table, with marble top and carved ebony legs.

Two Japanese screens, with frames of iron wood.

Large Mandarin chair.

Lacquered cabinet, with ivory fittings, for a work-table.

Porcelain bath.

Produce of China:—

Specimens of cotton manufacture.

Samples of nankeens, yellow and white. Manufactures of grass or linen. Manufactures of silk. Pongee silk handkerchiefs, plain and figured. Pongee silk, plain white. Syechuen pongee, in various colours. Black silk handkerchief. Black silks and satins. Crape shawls, handkerchiefs and scarfs, plain, damasked, and embroidered. Various silks, gauze, and embroidery.

10 Copland, Charles Matt., A.M., *South Villa, Kennington Oval*—Proprietor.

Chinese writing desk, containing the Chinese implements for writing, calculating, &c.

Chinese rice paper, two bundles, being the sliced pith of a tree; used for making artificial flowers, drawings, &c. It is extremely brittle.

Chinese drawings, in five books, in silk binding, consisting of designs for lamps, flowers, fruits, butterflies, and insects; trades; fishes; birds; amusements; shipping; costumes; landscapes, &c.

Two small drawings. Drawings, on rice paper, of fishes, landscapes, figures, boats, flowers, &c.

Eight small drawings, framed and glazed, of similar material.

Chinese paintings in two silk frames. Landscapes in oil.

Chinese screen, japanned, black, and gold. This screen of eight leaves, size eight feet by two, represents the culture of rice from the sowing to the reaping, harvest home, &c.

Chinese screen, of rosewood and painted marble panels. Painted in the peculiar style of the Chinese, and forming their usual sideboard centre ornament.

Japanese writing-desk. Exhibited for the style of japanning, now being introduced into this country. Black and mother-of-pearl.

Lady's tortoiseshell hair-comb, finely carved. Pair of bracelets, fine gold, filigree pattern. Chinese chop-sticks bearing name of exhibitor in Chinese characters.

Lady's work-table. Box for playing cards. Tea-caddies. Cigar-boxes. Round writers. Card-case. Card counter boxes. Fan. Chessmen. Snuff-boxes. Chinese figures of soapstone. Chop-stick and knife. Spoons. Chinese compass. China ink. Tissue paper. Writing and account books. Figured silk. Pith of a tree.

[It has been considered that much of the superiority of the Chinese japanning is due to the possession of a superior gum resin for the varnish employed. Much also must be attributed to the long experience of the followers of their art. In England it is comparatively of recent introduction. But exhibited specimens appear to show that there remains little to be desired in England of finish and execution.—R. E.]

11 LINDSAY, H. HAMILTON, *Berkeley Square*—Importer.

Silk :—Bales of Taysaam and Tsatlee raw silk, weighing 80 catties each.

Damask; scarlet, blue, gold colour, gold colour ground; and various colours, as white, lilac, crimson, light green, gentian blue, brown, purple, and pearl.

Sample of white figured satin.

Embroidery. Two pair of screens with dark wooden frames.

Embroidered chair-seats.

Flax :—Seed of the flax from which the Chinese grass-cloth is made.

Fibre of the flax, undressed. Yarn.

Grass-cloth, first, second, and third qualities.

Black grass-cloth, first, second, and third qualities.

Brown grass-cloth.

Cotton :—Canton nankeen, yellow, blue, and black.

White cotton cloth. Blue cotton cloth. Gaut Po.

Gold and silver shoe of Foo-nam gold, weighing 9 tales 7 m. 9 c.

Eight bars sycee silver, weighing 109 tales.

Gold filigree, ten specimens.

Silver filigree, ten specimens.

Porcelain :—Two large jars and two smaller.

Two punch-bowls.

Breakfast set, painted with agricultural and manufacturing designs.

Bronze heong loo, or tripods, used for burning incense.

Two carved rhinoceros' horns.

Edible birds' nest, finest quality.

[The material of which these nests, so highly valued by the Chinese, are made, is generally considered to be derived from the fuci, a race of marine plants. The bird appears to subject the material to a process of elaboration until it is reduced to a plastic state, and then moulded into form. The nests are valued beyond their weight in gold, and are only obtained at fearful risks, from the position they are found in on the precipitous sides of sea cliffs, and in cavernous recesses unapproachable by sea or land in the ordinary ways. Their medicinal properties appear to be of a restorative character.—R. E.]

Another, of inferior quality.

Beche de mer.

Say-hing Chinese wine. A fermented liquor made from rice, and drank hot.

Two jugs for holding the same.

Six silver cups for drinking the wine.

Two models of the feet of Chinese women.

Three Chinese mariners' compasses.

Model of a Chinese pump.

Two Chinese pumps.

12 PARKER, The Rev. Dr.—Producer.

Box containing various seeds.

Box containing various woods.

13 ASTELL & Co., *Vigo Street, Piccadilly*—Producers.

A Chinese printing press.

14 PALMER, MACELLOCH, & Co., 1 *King's Arms Yard, City*—Producers.

Some specimens of silks, from China, made up especially for the Exhibition.

15 DENT, L.—Producer.

Chinese bedstead, of curious and finished workmanship, inlaid with ivory and mother-of-pearl.

Samples of silk.

16 THOMS, P. P., Printer, *Warwick Square*—Producer.

The original Address, with the signatures of 776 merchants and tradesmen, presented to his Excellency Hwang, on his being appointed the deputy governor of the province of Canton, during the reign of the Emperor Kang-he, about the year 1684.

The Address measures in length eight feet, and in width six feet nine inches. It contains 2,328 Chinese characters, finely worked in gold, on silk, and is lined with Chinese embossed velvet, surrounded with a gold border.

Accompanied with a translation of the Address, by Mr. P. P. Thoms.

We, the undersigned, respectfully approach and pray that a blessing may descend on Tsincho (private name), our literary father Hwang, who being of noble descent, may glory and honour attend him! The poets say that the tung tree, when agitated with the golden wind, not only sends forth its fragrance, but with age becomes more luxuriant, and more splendid and glorious. May not such be said of your Excellency; for when you filled inferior appointments, one might as well endeavour to stop the ascent of vapour, the motion of the clouds, or pull the planets out of their courses, as to impede the promotion of you, our minister. We will revert for a moment to the manner in which you discharged your duties, when on the southern part of the province, even then were the high exertions of the one party met by the doubts and fears of the other. But the obdurate portion of the community were compelled to respond praise; while by your natural and auspicious talents, you brought low your opponents' lofty mountain, when the expectations of the people were realized by your virtuous life.

Unexpectedly you were appointed to preside over the western district of the city (that part where Europeans reside), when the respectable and honourable inhabitants assembled before your door, who resembled a covey of sparrows, which hop to and fro, anxious to give expressions to their feelings, enjoyed what they had long desired, to offer you their congratulations on your coming among them; and now they thus address you.

We, mean people, have long dreaded covetous magistrates, who have been compared to voracious tigers with wings. But brighter prospects now shine forth; since the felicitous Lin, with its horn, has come among us; while the Fung, the king of the birds, has also built his nest. Having both the Lin and the Fung, we know we shall have that which is just and correct. When unable to trace the footsteps of either the wolf or the tiger, may we not rejoice; and at the sound of the drum dance the whole splendid and luminous day through? This is natural to man.

Whilst the five sacred mountains are to the south of China, Canton is the first of provinces, and of its provincial districts, Nan-hae is the chief. Here, to the west of the city, multitudes of inhabitants dwell, who possess indocile dispositions, and who make tranquillity their inheritance. Enjoying tranquillity, the troubles of commerce disturb them not, and in the maintenance of correct principles, they consider their lives not worthy a thought. Heaven's kindness we perceive is not withdrawn from us, since your Excellency is appointed to preside over us. On alighting from your carriage, you will make yourself acquainted with that which agitates and unsettles the minds of the people; when, ere the lapse of several months, awe and respect will be maintained; then, from the going forth of the sun, we shall not require the lictor's whip to impart fear; or, on the sun's setting, be required to bolt our doors. Dwelling in safety, we shall hail the morning's splendour; the blessing of a mild and good government. When the disorderly of the national family know and observe correct principles; when the farmer and the labourer of the rural districts apply themselves to their field and garden, industry will pervade all classes, whether their employment be within or without doors. Order being rendered luminous, who is there that will dare insult? or who, on examining the benefits of kindness, will violate the laws? Knowing your benevolent deportment, we regret that it is not more widely diffused, for such virtue is illimitable. We tremble for the consequences.

The autumn is luxuriant, and the sun shines in full splendour. At such a time, well might the man of letters, and the man that fills an important station, cement themselves together, to offer praise to the Divine Powers! While the husbandman is singing in his field; the mechanic happy in his shop; and the merchant delighted with his speculations, the sire will beat time as the children dance, and are regaled with a cup of tea or a glass of pleasant wine; and the eyes of the youthful will sparkle, as they ascend the stately hall,—for all mankind have a heart.

Were we to expatiate on your noble virtues, or attempt by verse to give them perpetuity, we should find our ideas bounded, and our feelings wanting in language, while words would fail to describe your worth. Can Le-chaon-ting (the presenter of the Address) find words? We answer for him "Yes, yes!"—this is what we desire.

We who have only studied in the colleges, can but gaze at the heavens and at the everlasting hills, and wonder at their altitude. As we move among the masses of the population, whose feelings, as well as their attainments, cause humility; seeing the scantiness of our intellect; having an earthly soul, and but human powers; when compared with you, our attainments how deficient!

We have heard that on your leaving the capital, you presided over the district of Tsoo-hang, which became the means or steps that caused your appointment over the districts Luy-chow and Keung-chow, followed by an audience with his Majesty, who conferred on you rank with promotion. As this will be the year for subjugating the violent, honour will be achieved by him who has been sent forth by the Han-Lin college.

From time immemorial, Heavenly (Imperial) rank ennobles individuals; while Heavenly (Imperial) emolument daily enriches. Heaven's (the Emperor's) heart or feelings towards his family (the people) is daily benevolent. When the Emperor is enriched, the people have abundance. Receiving an appointment from Heaven (the Emperor) it is Heaven's appointment. The diffusing of virtuous feelings among the people; are they not the feelings or virtues of Heaven? Of all the multitudinous affairs connected with this mundane system, there is not one event but what is derived from Heaven; not one, but what is intended for a blessing.

The ode says—

> Pleasure—does it not come from the Prince,*
> Who is both Father and mother of his people?
> Joy—comes it not from the Prince;
> Virtuous sounds that know no termination?

May joy and pleasure exist, as long as time shall endure! which is the blessing of all those who hold appointments in China. Why should not the blessing be multiplied?

Requesting permission to offer our venerable father a full cup of blessing, we forthwith, bowing, pay our dutiful respects.

(Here follow the signatures of the merchants and tradesmen.)
Dated during the reign of Keen-lang,
whose reign closed about A.D. 1722.

2 Forty-two Chinese engravings on wood, descriptive of the ancient vases of the Shang dynasty, from the year 1743 to 1496 B.C. With a description of each, by the exhibitor.

3 A Chinese sceptre, of the form of the sceptre given to Yu, by the Emperor Yu-te-shun, 2169 years B.C., on which the Budhists have depicted the idol Show-sing-kung, in a state of beatitude, accompanied by the Pa-sëen, or eight Chinese deified persons, who are supposed ever to be rendering assistance to persons in distress, or suffering under calamity, viz.: 1. Tsaou-kwo-kew; 2. Han-chung-le (once a general); 3. Te-kwei-le; 4. Leu-tung-pun; 5. Han-seang-tsze; 6. Chung-ko-loo; 7. San-tsae-ho; and 8. Ho-sëen-ke (a lady of Canton). They are represented as succeeding each other in their ascent to the blissful regions.

4 The Pa-sëen, or eight immortals, carved in stone, on a stand representing the clouds. On the reverse side of the stone is the Lung—the Imperial Arms of China—said to have existed above 5000 years.

5 The goddess Kwan-yin, in stone, on a carved stand.

6 A representation of the god of wealth, who is holding over his head a small Chinese coin, carved in wood.

7 The god of longevity, carved in wood.

8 Court beads, worn by the principal Ministers of State, implying that as a horse is governed by the bit and bridle, so the wearer (the Minister of State) must submit when necessary to be curbed or governed by the sovereign.

9 An ancient Chinese celestial map, and a map of the world, but principally of China. This map gives the position of those kingdoms that have had intercourse with China, viz., Tartary, Japan, India, Spain, Portugal, France, England, &c., as well as the provinces, chief towns, and districts, and the course of the principal rivers of their own empire.

10 A beautifully coloured modern Chinese celestial map, by a Budhist priest of Canton. The relative size of the six nearest planets to the sun are given in an explanation at the foot of the map.

11 A map of the city of Canton, with its public buildings and suburbs. In the latter is shown the part assigned to the European commerce.

17 RIPLEY, P. W., *Canton*.

A collection of the various teas exported from Canton:—

1—5 Chests of souchong, hyson skin, black leaf, pekoe, 3rd class flowery pekoe, and hyson.

6 Canister of second class flowery pekoe.

7—9 Chests of oolong, pouchong, and congou.

10 Case containing two boxes of first-class flowery pekoe.

11 Half chest twankay.

12 Case containing boxes of imperial, gunpowder, young hyson, and small-leaf hyson.

13 Case containing boxes of scented caper, scented orange pekoe, and plain caper.

14, 15 Half chest of ning yong, and plain orange pekoe.

16 Case containing boxes of morjune gunpowder, morjune imperial, and morjune young hyson.

17 Case containing boxes of spurious scented caper, spurious gunpowder, and camshaw teas.

18, 19 Cases containing present teas, and physic teas.

18 BARING BROTHERS, *Bishopsgate Street*—Producers.

1 Carved ivory tree, with ball containing 24 others, all from one piece.

[A number of ingenious conjectures have been made as to the manner in which these balls are produced. In a preceding Class, XXIX., a note occurs explanatory of the process. It is still, however, a subject of some uncertainty, some authorities stating that they are turned out of the solid, others that they are ingeniously united together.—R. E.]

2 Two embroidered chair covers.

3 Card case, in ivory.

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* The channel by which God bestows his national blessings.

4 Another in sandalwood.
5 Four pieces rich satin, different colours.
6 Four paintings.
7 Four painted lanterns.
8 130 specimens of China-ware.
9 Model of a cargo boat.
10 Model of a mandarin boat (revenue).
11 Curiously carved stove and frame.
12 Carved wood chairs.
13 Six bronze and three carved wooden figures.
14 Pair of jars and stands, and pair of wooden stools.
15 Case of small lacquered-ware articles.

The above are all productions of the Chinese, Nos. 9 and 10 being sent out by Houqua.

16 Twelve handkerchiefs, embroidered on pina (cloth made from fibres of the leaf of the pine), the work by natives of Manilla, Philippine Islands.

19 **Braine, C. T.**, *Way House, near Taunton*—Producer.

Fan of painted and embroidered feathers.

Wooden furniture—Table, 3 ft. 3 in. square, 2 ft. 9 in. in height. Bookcase, 6 ft. high, 3 ft. 9 in. in breadth, 2 ft. 3 in. in depth. Hat stand, 7 ft. high. Set of miniature furniture. Earthenware flower pots. All of Chinese manufacture.

20 **Bowring, Edgar A.**, Acting Secretary to the Commission—Producer.

Bas-relief specimen of Chinese costume, "a lady of rank reclining on a sofa." The whole formed of silk.

21 **Boileau, Lieut.-Col. A. H. E.**, Bengal Engineers, *Gerston Terrace, Paignton, near Taunton*—Producer.

An illuminated missal, containing 64 pages, painted and written on one side only.

22 **Daniell, J.**, 11 *Cumberland Place*—Producer.

Two embroidered Shang Hae dresses.

Fan of embroidered feathers.

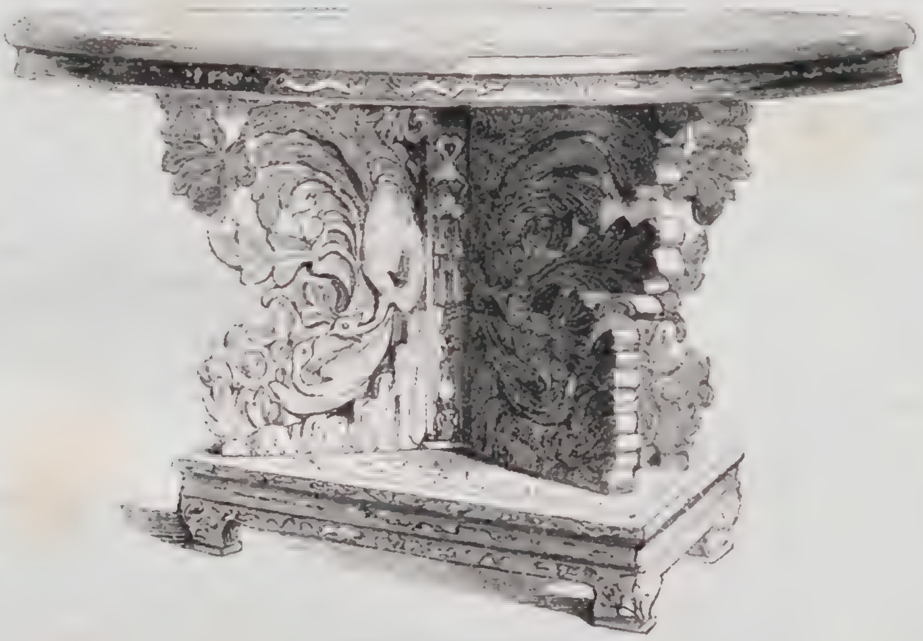
23 **Monteiro, L. A.**, 2 *Upper Phillimore Place, Kensington*—Producer.

Five cups and five saucers of Chinese or Oriental enamelled jewelled porcelain, with European landscape in the bottom.

24 **Bowman, Wm.**, 9 *Bread Street, London*—Producer.

A table made in the north of China, being a gift from John Bowman, Esq., of the firm of Messrs. Dent, Beale, and Shanghai, to the exhibitor.

The accompanying cut represents this table.



Carved Chinese Table.

25 **Rawson, Christopher**—Producer.

A Japan cabinet. Japan ware.

26 **Rawson, T. S., Esq.**

1 A Japanese cabinet inlaid with mother-of-pearl.

27 **Rawson, C., Esq.**

2 A Japanese red lacquered ware sweetmeat box, on wheels.
3, 4 Two Japanese red lacquered ware ornaments.
5 A Chinese ivory ball, containing fifteen separate balls.
6 A specimen of bamboo carving.
7 A Chinese medicine cup.
8 A specimen of Chinese carving, representing the finger citron.
9 A Chinese figure with head and feet of cast-iron, and the mantle of the old cracked China ware.

28 **Rawson, Mrs.**

10 A specimen of Chinese needlework, embroidery in silk.

29 Specimens of grass cloth, or China linen, shipped by Messrs. **Wm. Pustan & Co.**, at Canton, to Messrs. **James Barber & Co.**, Southampton, and Messrs. **G. H.** and **J. F. Wulff**, London.

Grass cloth. Bundles of flax yarn. Bundle of flax. Half-catty of flax seed.

30 **Sichart & Co.** (Importers of Chinese and other Fancy Goods), 169 *Fenchurch Street.*

1 to 8. A large Chinese vase, painted with 10,000 characters, each character a distinct word; the whole forming an ode on longevity. Carved ivory ornaments. Carved wood ornaments. Diminutive boxes, carved from peach stones, representing junks, baskets, &c. Glass screens and paintings on glass. A large censer, being a fine specimen of enamelling on copper. Fans and hand-screens, manufactured from the gelatine of the head of a fish. China-ware of various descriptions.

31 **Walkinshaw, W.**, *Hong Kong*—Producer.

A Chinese temple or summer-house. By Patrick Dudgeon.

The "Celestial cup," presented at Hong Kong races, 1850. Silver cup, presented at Hong Kong races. Nephrite or jade-stone cup.

32 **Twining, Richard**, 13 *Bedford Place, Russell Square*—Producer.

Large copper tripod, with stand, and a marble stool for same.

Marble screen, large, and a smaller one.

1 Copper vessel, with wooden top and stand.
2 "Buffalo with man." Stands for each.

Marble top and stand for the small articles.

33 Carpenter, F. S., *Queen's Road, St. John's Wood*—Proprietor.

A carved bamboo walking-stick, from the north of China.

34 Standish & Noble—Importers.

Cupressus funebris, or weeping cypress, a new hardy tree, imported from the north of China. (*Outside Eastern End.*)

Japan.

No. 28, Red copper from Japan; No. 20, Vegetable wax; No. 22, Specimens of varnish; and No. 14, A product styled coarse silk in the list furnished, but supposed to be the fibre of a species of cactus.

35 Hammond, W. P., & Co., *London*—Importers.

Specimens of the various teas imported into this country from China, comprising the different qualities of congou, souchong, oolong, orange pekoe, twankay, hyson, young hyson, imperial, gunpowder, &c. Small bundles of tea leaves in an untwisted state, and also tightly twisted into rope; made from the large leaves which shoot from the plant after being cut down. Twelve native paintings on rice paper, illustrative of the tea-plant cultivation, &c. Specimens of the different qualities of China raw silk. A camphor work-box containing ivory carvings.

36 Hammond, Wm., *London*—Producer.

Model, made to scale, of an opium smuggling-boat, used on the coast of China.

37 Berncastle, Dr., 80 *Albany Street, Regent's Park*—Producer.

1 Chinese soldier's sword.
2 Mandarin's sword.
3 Mandarin's double sword, in one scabbard.
4 Chinese ornamental sword, made entirely of cash.
5 Chinese opium pipe, with appurtenances.
6 Life-buoy, generally tied to the backs of all children living in boats on the rivers of China.
7 to 9 Chinese pillow, padlock, and razor.
10 Chinese soldier's hat.
11, 12 Two carved bamboo cups.
13 Purse always worn by Chinamen in front.
(All the former articles from Canton.)
14 Chinese beggar's gong, which he can beat in any shop until alms are given to him.
15 A bundle of money, called "a mace," containing 100 cash, value 4*d*.
16 Mandarin's chop-sticks and knife-case, worn by the side of his sword.
17 Chop-sticks used by the lower orders.
18 Scales carried by Chinamen at Canton to weigh Spanish dollars which are current there.
19 Tea plant from the Fa-tee gardens, near Canton.
20 Beans from which soy is made by fermentation, from Whampoa.
21 Oil painting by a Chinaman, copied from an English print, from Canton.
22 Bamboo shirt, worn in very hot weather, from Shanghai.
23 Monster bean from Kandalla, in the Ghauts, Bombay Presidency. Each bean can be made into a snuff-box.
24 Baag-nouk, or tiger's claw, used by the Mahrattas to assassinate a secret enemy, from Poona.—See "*Berncastle's Voyage to China*," vol. i. page 238.

38 Ansted, Professor, 17 *Manchester Street, Manchester Square*—Producer.

A collection of minerals from China, made and forwarded by Dr. Bowring, Her Britannic Majesty's Consul at Hong Kong.

These minerals include the following articles:—

Three specimens of coal from different parts of China.

A black calcareous flagstone from the south-west part of Canton province, used for tombstones, tablets, &c. A red gritstone used in paving Canton. Four specimens of sandstone of various degrees of fineness used as hones and whetstones. One fine hone that has been long in use. One piece of soapstone (steatite) used with hones.

Two cut blocks, and four small cylinders of hard jade, illustrating the working of that stone, and one specimen of a kind of coarse granite, the powdered fragments of which are used in cutting jade.

One specimen of white, and four of smoky quartz, used for spectacle glasses.

Three specimens of fibrous gypsum (crystalline).

Four specimens of malachite, and one packet of cinnabar, in grains, from Yunnan province, both used as pigments.

Four specimens of common kinds of clay used in coarse pottery, &c., and one tile made of such clay.

[These minerals are of considerable interest, and were obtained by Dr. Bowring, at the request of the exhibitor, conveyed at the close of the last year, and acted on immediately, but the time occupied in forwarding the goods, prevented an earlier exhibition of them. Of the whole series, the coals are, perhaps, among the most interesting, as although the specimens are small, there is not a shadow of doubt as to their being true coal, and not lignite. The three specimens are from different localities, and of very different kinds, one being probably anthracitic, another bituminous, and the third probably intermediate. There can be no doubt of the importance of these minerals, if they can be brought to the coast at a cheap rate.

The whetstones are also of some interest, and the hone appears to be of admirable quality, its texture being perfectly even and fine grained. The jades are also worth notice, as, although numerous finished specimens had been frequently sent, the raw material had not often been seen. It is fine grained, and must have been very difficult to work. The clays are of the common kind, but fine, and of very fair quality, at least in appearance.—D. T. A.]

PERSIA

North Area, I. 40.

The contributions of several British exhibitors, with those of one native, have been brought together in order to convey a somewhat adequate conception of the peculiar industrial products of this country. The collection, though not of great extent, is of much interest, and presents a faithful picture of the peculiar direction taken by the industrial activity of Persia. In particular, the celebrated rugs and carpets of Persian production are represented, and give a true test of the prevalence of those principles of chromatic selection which influence the inhabitants of bright and sunny climates. The gold and silver embroideries form likewise a distinguishing feature in articles of apparel of Persian origin. The character of these articles can never be mistaken; the ornament displaying much tastefulness, but that peculiarity of arrangement and design which immediately leads to the recognition of its Eastern origin. The miscellaneous objects connected with Eastern luxuries, and particularly with that of smoking, also exhibit their characteristic features. The interest of the manufacturer will be awakened by the box of samples of silk exhibited, and which have been derived from the factory at Luedia, near Antioch, in North Syria. The four Persian panels, representing the incidents of an Oriental marriage, are also curious and instructive.—R. E.

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1 **Abbott, F.**, Esq., 22 *Jermyn Street.*

Two Persian rugs.

Two boxes carved pear-wood spoons.

Three pair papier maché book covers.

Two looking glass frames.

Five kalemdans (penholders).

Two Persian knives. Four purses.

2 **Araman, Haud**, Esq. (Agent, D. Muller, 32 *Lowndes Street, Belgrave Square.*)

Three silk and gold embroidered scarfs.

Two scarfs (all silk).

Two dresses for ladies, in silk and cotton.

A dress for a gentleman, in silk and cotton.

A silk and gold embroidered cushion.

Four silk and gold bags for ladies.

Three pair silk and gold slippers for ladies.

Two pair silk and gold slippers for gentlemen.

Three silk and gold caps for gentlemen.

A caffea (head-dress or turban). A silk girdle.

Embroidered purses and sashes.

Ornaments of various kinds, such as seals, rings, &c., of Jerusalem manufacture.

3 **Thompson, J. B.**, Esq., M.D., 5 *Suffolk Place, Pall Mall.*

Two pieces of Persian needlework.

Two handsome silk scarfs (new patterns).

Four pieces of embroidered gold and silver (for slippers, caps, and reticules).

A purse. Scented wood.

Two beads. Scented wood.

A mother-of-pearl bead.

A Persian khorapan dagger, with ivory carved handle, with female figure.

A narghili or hooka, for smoking.

A lady's amber mouth-piece. Three silk purses.

Two pair lady's slippers, yellow.

A silk and cotton under garment, of a peculiar manufacture.

A handsome cloak of peculiar material.

A table cover of Persian manufacture.

A box of silk samples, from the factory at Luedia, near Antioch, North Syria.

Four boxes with Persian scenes painted on them.

A small packet of Farnbac or Persian tobacco, most useful as a medicine in stomach and chest affections.

A group and six figures in Oriental costume, and a Druse Princess wearing the Tantour, a peculiar head-dress in Mount Lebanon.

Several valuable books and manuscripts in Persian, Turkish, and Arabic.

Specimens of medicines from Syria, Turkey, and Persia.

Samples of wheat from the above countries.

An Oriental album, showing the costumes of these countries, &c.

4 **Ede, Francis, & Son.**

Four Persian panels:—

1 Agis, an old king of Persia, having no male issue, and an only daughter, is here represented buying a neighbouring chief named Yussuff, to marry him to his daughter Zulika, thereby retaining the throne in his own family. Porters are seen bringing the money, of which a great quantity is lying on the ground.

2 The old king Agis making a feast to Yussuff his intended son-in-law, who is here represented standing on one side, while the women are dancing before the throne.

3 Here is represented the old king's daughter Zulika, in her harem, and the shame and confusion of her maids of honor, at the entrance of Yussuff before being married.

4 Yussuff becomes king by his marriage, and is here represented at dinner with his courtiers.

5 Watson, Bell, & Co., 35 *Old Bond Street.*

Three Persian carpets.

6 Copeland, Alderman, M.P.

A carpet, 34 feet by 9 feet 6 inches.

7 Bidwell, John, Esq.

A table cover.

8 Major, C. T., Esq., 21 *Billiter Street, London.*

Two Persian rifles and a sabre.

9 Mills, W. F., jun., Esq., 3 *King's Parade, Chelsea* —Proprietor.

Various articles collected by Mr. Mills, sen., during a residence of some years in Persia.

Portraits of the late Schah, his son, prime minister, and several others, executed in water colours, by a Persian artist.

Persian table cover, (needlework).

Persian dress (male).

Inlaid Persian work-boxes.

Papier maché work-boxes.

Persian pen-cases, playing cards, scissors, padlock, lady's collar and veil; comb and glass in box.

Arabic almanac.

Damascus sword blade.

Indian chessmen.

Bombay work-baskets and card-baskets, &c.

10 Hudson, J., 132 *Oxford Street.*

Illustrations of Persian smoking, with various specimens of Oriental pipes, tobacco, &c.

SOCIETY ISLANDS.

ST. DOMINGO.—BRAZIL.—BOLIVIA.—CHILI.

NEW GRANADA.—MEXICO.

SOCIETY ISLANDS

South Area, M. 42.

From this interesting group of islands several articles deserving of notice have been sent. Her Majesty Queen Pomare exhibits an interesting collection of specimens of native manufactures. The material of some of these is derived from the leaves of a species of *Pandanus*, that of others is obtained from a species of *Tacca*, and white cloth from the inner part of the bread-fruit tree, with fringe from that of a kind of *Hibiscus*, are also shown. An interesting object also is an Indian vase, employed for keeping the utensils used at meals. Specimens of coffee and cotton of native growth are likewise exhibited in this collection.—R. E.

Her Majesty Pomare, Queen of the Society Isles.

1 Eight fine mats, manufactured by women of the Society Islands. The tissue is formed of the leaves of the Fara, a variety of the *Pandanus odoratissimus* of Linnæus. The leaves of this shrub are shaped like a long sword, about 5 centimetres broad, and one metre or more in length. Before using them they are submitted to the following preparation.

After having gathered the leaves they are buried in the sand close to the sea for about a month, to render them soft; they are then scraped with a shell to render them supple and smooth, this process should be gone through with care, as the fineness of the mat depends on it. The leaves having been thus prepared, are divided into threads which should always be of one fineness for the same mat; for this operation a shell cut like a saw is used. The plaiting is then nothing but an affair of patience.

2 Five head-dresses (coronets), and eighteen pieces of tissue for ladies' bonnets. These are also made by women. The material used is the plant commonly known in these islands by the name of pia, arrow-root by the English, *Tacca pumalifida* by botanists. The petals of this plant are gathered a short time after it has flowered, and when the seeds begin to form; they are divided into threads and plaited, being rubbed at the same time with a shell on a plank or any other support. This operation causes the green colour entirely to disappear, destroys the inner skin, and leaves only the fibrous parts which are extremely thin. They are then dried in the sun, by which the pia acquires that brilliant whiteness which forms their chief merit. By taking care to preserve them against damp, the bonnets and coronets of pia retain their freshness for several years.

3 Three pieces of white cloth, manufactured by the women of the Society and neighbouring Islands. In this manufacture they employ the bark of the young branches of the *Artocarpus* of Linnæus, commonly called the bread-fruit tree, and known to the inhabitants by the name of maiore or uru. The yellow fringe to this is made from the inner bark of the *Hibiscus teleaceus*, and is an article of dress worn by the native chiefs of both sexes. They choose those branches of about two or three centimetres in diameter, which they strip of their bark close to where the branch joins the tree. This bark is then stripped of its skin and beaten with a mallet. They treat in the same manner the bark of the anté, *Broussoretia papyrifera* of botanists, which is employed also in the composition of this cloth, being used to give it a consistency and whiteness. The two together are then exposed to the dews of the night for three or four weeks, they are then mixed in equal proportions, and formed into little bundles which are beaten with a mallet till they become a pulp. The mallets used are formed partly of stone. For the commencement of the operation the sides of the mallet are a demicentimetre in size, and as the pulp gets finer the mallets are turned or changed, so as to arrive gradually at a surface of not more than a millimetre or even less.

4 A hinai or Indian vase, in which is kept the utensils which the Tahitians use during their repasts. The material used is of a remarkable tenacity, and is made of the *Frugenistra luoiliano* of botanists, a sort of "Siam filandreuse, or tige rampante," which is called by the inhabitants Ieie. All the ancient chiefs used the hinai; but now that our vessels in earthenware, glass, and porcelain have become known, they are very little used.

Hurtell, M., French Colonist.

A specimen of native coffee.
A specimen of native cotton.

ST. DOMINGO

Area, R. 30.

Sir R. Schomburgk, the well known botanist and traveller, has transmitted from this republic a collection of raw materials of much value and interest. It includes mineral and vegetable products, principally the latter. The mineral products consist of specimens of copper ores, and of other ores from unexplored mines in the interior of the island. The vegetable productions comprise a number of specimens of mahogany of different qualities, and some of satin-wood. Samples of starch and of vegetable wax, and a singular petrified mass of half-burnt wood was also found here.—R. E.

Schomburgk, Sir Robert, H. M. Consul to the Dominician Republic.

Copper ore and allied rock, from the unexplored mines in the interior of the island of St. Domingo (Dominician republic).

A petrified piece of shaucha, a wood used at St. Domingo for posts to construct huts, &c. It has probably been converted into stone after the hut had been burnt down, for the wood bears the mark of fire. Received from Senor Antonio Volta, of the city of St. Domingo.

Starch prepared from a plant called Zuayiga, found in great abundance in St. Domingo.

Vegetable wax and candles, prepared in the island from the produce of a shrub (probably *Myrica cerifera*, Lin.) indigenous in the northern parts of the Dominician republic.

Fourteen specimens of mahogany and four specimens of espenillo, or satin-wood, from St. Domingo, viz. :—

1—3 Caoba veteada, common.
4, 5 Caoba mosqueada claro.
6, 7 Caoba mosqueada.
8 Caoba floreada. 9 Caoba media ondeada.
10, 11 Caoba ondeada.
12 Caoba trabada, y floreada.
13 Caoba trabada. 14 Caoba media enrizada.
15 Espenillo trabado. 16 Espenillo ondeada.
17 Espenillo enrizado. 18 Espenillo haspeado.

BRAZIL

East of Transept, M. Part of 42.

Four exhibitors only have furnished productions of Brazilian industry. These consist of a beautiful bouquet of flowers made of feathers, a model, some specimens of native working in leather, and some ornamental objects made of the elytra of beetles.—R. E.

1 Adamson, Olive, G., 11 *Panton Square, Haymarket.*

A bouquet of flowers of Brazil, made of the birds' feathers of that country, with the exception of a few made of beetles' wings in their natural colours. The bouquet comprises specimens of the coffee, cotton, and tobacco flowers. Constructed expressly for the Exhibition.

2 Cox, —.

Model of a native raft.

3 Mornay, Edward de. (Agent, Mr. Peat, Saddler, 14 Old Bond Street, London.)

Set of bridle reins. These reins were procured from the province of Rio Grande da Sul, Brazil, by Dr. Domingos da Sonza Liao, Senhor d'Eugenho, planter, in the province of Pernambuco, for the Exhibition, by the exhibitor.

They are made of raw bullock's hide, and linked with silver; the hide is prepared, cut, and plaited without the aid of tools, other than a common knife.

Cap. The cap is made in the Sertaô (the interior) of the province of Pernambuco. The leather is made from the hide of the red deer of that country.

These articles are intended by the exhibitor as specimens of the industry of the less civilized of the inhabitants of the Brazils.

4 Major, C. T., 21 *Billiter Street, London.*

Leaves and butterfly made of beetles' wings, by Henrique José da Silva, Rio de Janeiro.

BOLIVIA

Keating, Thomas, 79 *St. Paul's Churchyard*—Importer and Proprietor.

Specimen of matico (*Piper angustifolium*), the Peruvian styptic, imported from the province of Chequas, in the eastern extremity of Bolivia.

[This valuable plant, which is esteemed as a powerful styptic and astringent, was first made known to the medical profession in England, by Dr. Jeffrys, of Liverpool, in 1839. It has been found to be of the greatest value in cases of diarrhœa and cholera.—R. W.]

CHILI

East of Transept, M. Part of 42.

The only contributor of Chilian objects is one who has forwarded an interesting specimen of the mineral wealth of that country. This is a lump of gold ore, weighing 3 cwt., which was brought from a deep mine on the back of a miner. There are also specimens of other ores, which contain a large per centage of copper, a metal generally far more productive to the mine-owner than the preceding.—R. E.

1 Schneider & Co., *Broad Street Mews.*

A lump of solid gold ore, weighing 3 cwt. Brought on the back of a miner from a depth of 45 yards below the surface.

Two samples of copper ores, containing 62 per cent. of pure copper.

NEW GRANADA

South Area, S. 1.

The most interesting feature in this small collection is the exhibition of emeralds. Four out of the five exhibitors have sent only these precious stones. They are shown in their rough state, and of various degrees of purity. The larger specimens are defective in regard of colour and the presence of flaws. The mine of Muzo in this republic has been the source of these stones. In Class 1 of the United Kingdom, an interesting specimen of emeralds in their matrix is shown which may be advantageously compared with these specimens. Some samples of cocoa reputed to be of superior flavour are also exhibited.—R. E.

1 A bag of cocoa. Various emeralds.

2 Grut, Benjamin—Importer.

A bag of cocoa (*Theobroma cacao*), known in commerce as Caraccas cocoa; consumed chiefly in Spain and South America.

3 Ballaras, G. E., *Bogotá*—Importer.

A specimen of emerald, the property of the exhibitor, from the mine of Muzo in New Granada.

4 Paris, E., *Bogotá*—Producer.

Specimens of emeralds, from the mine of Muzo in the republic of New Granada.

5 Bonito, Sir T.

Specimens of rough emeralds.

MEXICO

South Area, L. Part of 42.

From Mexico a few interesting though unimportant articles have been sent through the Mexican Commissioner. The landscape in relief is a singular illustration of a peculiar art of pictorial representation. The collection of woods may prove of value to the naturalist, with the wax models of Mexican fruits, flowers, and reptiles. A bottle of oil, called oil of coquillo, is also exhibited.—R. E.

The Mexican Commissioner. (Through Messrs. Dunlop & Scherles, Southampton; and Messrs. Lightly and Simeon, London.)

A landscape in a gilt frame of the material known by the name of camalote: in relief.

A frame of wax flowers.
A collection of woods.
Oil of coquillo in a small vessel.
An etching in a frame.
Three cakes of chittle (first material).
Designs of fruit and reptiles in wax.

UNITED STATES

North and South Areas, G. H. I. 71 to 76; J. K. L. 71 to 75; M. to R. 71 to 76.

Commissioner, Edward Riddle. *Secretary*, N. S. Dodge.

The industry of the United States, though extending over numerous branches of manufactures, mining, navigation, and useful handicrafts, is, in a very large proportion, devoted to the pursuit of agriculture. Whole sections of the country have, until within a short time, virtually disregarded, if not explicitly disowned, every other pursuit, and have left mining, trades, and manufactures, together with the resources and means for their prosecution, without encouragement either by state legislation or by the application of capital and labour to their development. The natural effect of this has been to give prominence in the exhibition of industrial results to raw materials and articles of food rather than to manufactured goods. Those parts of the country which engage in other arts than such as furnish raw materials, naturally seek at home the markets for their manufactures, finding it in general unnecessary to go abroad in pursuit of a foreign commerce for their productions.

The absence in the United States of those vast accumulations of wealth which favour the expenditure of large sums on articles of mere luxury, and the general distribution of the means of procuring the more substantial conveniences of life, impart to the productions of American industry a character distinct from that of many other countries. The expenditure of months or years of labour upon a single article, not to increase its intrinsic value, but solely to augment its cost or its estimation as an object of *virtû*, is not common in the United States. On the contrary, both manual and mechanical labour are applied with direct reference to increasing the number or the quantity of articles suited to the wants of a whole people, and adapted to promote the enjoyment of that moderate competency which prevails among them. It is nevertheless true, that a moderate number of establishments in the United States are either partially or wholly devoted to the production of goods of the more expensive kinds. Displays of these, together with other productions of American industry, are annually made at four or five of the principal cities of the United States, but they are hardly seen in the Exhibition. Those American Exhibitions, though local, and limited generally to the productions of a small part of the whole country, have usually far exceeded, both in the number, variety, and perfection of the articles, what is presented by the entire country in the London Exhibition.

In the precious as well as the useful metals, with the single exception of tin, the United States are exceedingly abundant. Besides the recently developed treasure of gold in California, there is on the south-eastern Atlantic slope a belt of gold-producing country extending from Georgia and South Carolina through North Carolina, Virginia, and Maryland, and, at rare intervals, further still to the north-eastward, till it reaches the borders of Canada. The industry employed upon this district of country has yielded at different periods from half a million to two millions of dollars annually.

The silver mines of North Carolina are mostly in near proximity with those of gold, but the precious metal is immediately associated with the minerals of lead. In the copper region of Lake Superior, silver is found closely united with the copper, especially in the extraordinary veins of native copper which abound in that quarter.

The samples of those veins in the Exhibition (one of them being more than a ton in weight), though well calculated to impress the beholder, are by no means of unusual dimensions. The exploration is in its infancy; but the quantity of native copper (which contains traces of silver) already amounts to several hundreds of tons per annum.

The mines of mercury in California are rich, and very favourably located to serve the purposes of the reduction of gold; the more immediate object to which the industry of that State is directed. A very recent discovery of cinnabar in North Carolina, will possibly be found equally important to the mining of precious metals in that and adjoining States.

Iron ores, in all the varieties known to any part of the world, are, in the United States, found in abundance, which may be truly termed exhaustless; they are but imperfectly represented by the specimens in the Exhibition. The iron mountains of Missouri are yet but very partially worked, as are the magnetic ores of northern New York, Vermont, New Hampshire, and Maine. The hæmatites of numerous States have been more generally employed in the charcoal and anthracite iron furnaces, while the argillaceous carbonates, existing in great quantities in connection with all the extensive coal fields of the country, have received, thus far, much less attention. For the manufacture of steel, a portion of the magnetic ores of New York are believed to be nearly as valuable as those of Dannemora, in Sweden. The number of iron works at which iron is manufactured from the ore in the United States, is probably not less than 600 or 700, but as many have at present suspended operations, the total quantity of their products cannot be accurately ascertained.

From their extensive applications to the arts, especially as pigments, the ores of zinc in several States of the Union are attracting considerable attention. The red oxide of one locality, together with its useful products, is well displayed in the Exhibition Large deposits of the sulphurets and carbonates accompany the still more abundant minerals of lead in Missouri, Wisconsin, and other States.

By far the greatest application of mining industry in the United States is that devoted to the raising of coal. The amount annually produced is probably more than four millions of tons; that of anthracite alone being not far from three millions. Its application to steam-engines, to the manufacture of iron in all its departments, is of exceeding importance to the industry and traffic of the country, while its employment in large cities for every domestic use, as well as for the industrial workshop therein established, exercises, on account of its freedom from smoke, a most salutary influence in preserving streets and houses, as well as the inhabitants and their apparel, from the perpetual annoyance elsewhere resulting from the sooty exhalations of bituminous coal. The semi-bituminous, highly bituminous, and cannel coal, distributed over about twenty States of the Union, are engaging much industry and capital in their exploration, and greatly aiding the extension of steam navigation, and the prosecution of numerous branches of art to which their respective properties have severally adapted them.

The manufacture of flint, bottle, and window glass is extensively prosecuted in the United States; but of plate glass nearly the whole supply of the country is imported. Of earthenware the coarser varieties only are produced in any considerable quantities. Of the finer earthenware and porcelain the whole supply is imported. Materials, both for glass and porcelain, are found in great abundance and purity in various parts of the country. In the manufacture of textile goods, of those qualities which supply the general wants of the community, large numbers of persons are employed at establishments spread over a majority of the States. The cotton-growing States are, in one or two instances, consuming at their own mills a large portion, if not the whole, of their produce in that staple, and the number of those factories is on the increase.

From all the manufactories of cotton goods, only some ten or twelve samples appear in the Exhibition. The article of largest export from the United States is raw cotton. It is also an article of extensive commerce between one part of the country and another for purposes of home consumption.

Woollen cloths, cassimeres, blankets, carpets, shawls, and sundry other articles, are among the prominent articles manufactured at many of the mills in the United States. Ingrain, Brussels, and other carpets are woven by American machinery, but only three samples of its work appear among the American contributions.

In the branch of manufactures from caoutchouc, the inventors and manufacturers of the United States have given much attention to those multiplied uses to which the peculiar properties of that substance adapts it, and have added one application to another, till nearly every known article of clothing, many of furniture, and numerous useful implements for various arts, are now manufactured from this material.

The inventive activity of the Americans is manifested in the annual production of about one thousand patented inventions, the novelty of which must be proved by a thorough examination, prior to the grant of letters patent for them. As might reasonably be expected, the largest number of these inventions is devoted to improvements in agriculture, especially referring to the implements for cultivating the soil, securing the crops, and preparing them for consumption. The aim of the inventors has been at once to secure simplicity and efficiency, alike remote from the rudeness which marked the farming tools of a semi-barbarous age, and from the complexity which adds costliness without adding value to many implements of husbandry of modern times. Without the improved machines for harvesting and securing them, many of the crops could not, owing to the scarcity of labour, be gathered in season, or, if managed solely on the plan of hand-labour, would not pay expenses. The characters just stated are illustrated in the few agricultural machines in the American part of the Exhibition.

Another branch of invention on which American ingenuity has been much employed relates to transportation by steam-vessels, railways, and common roads. The speed and convenience, the general accommodation, and the moderate expense attending the conveyance both of persons and merchandize, attest the success which has crowned these efforts. Except in the matter of bridges for railways and of carriages for common roads, however, this whole department is nearly without an illustration among the articles on exhibition. Of the numerous machines for dressing lumber, used in constructing buildings and for other purposes, one or two samples only are shown. It is by aid of machines of this class that builders in the United States can afford to construct, on one side of the continent, dwellings and warehouses to be set up on the other, after transporting them from Maine to California, through at least a semi-circumference of the globe.

But in no branch of invention or industry has the labour of the United States been more successfully directed to what the community feels to be among its most urgent and universal wants, than in the means and appliances for diffusing knowledge through the press. Large establishments have full occupation in manufacturing printing-presses, not a few of which are capable, when fully occupied, of throwing off from 5,000 to 12,000 impressions per hour. The manufacture of paper in all its varieties is commensurate with the extensive circulation of journals, pamphlets, and books.

Intimately connected with the other means of rapid, cheap, and unrestrained intercourse between all parts of the country is the Magnetic Telegraph, on which American ingenuity has been employed with signal advantage. The moderate cost and the easy use of American telegraphs have led to their general application for connecting the remotest parts of the country with each other, for the transmission of intelligence, for conveying meteorological information, for ascertaining longitude, determining questions in geodesy, and recording astronomical observations with an ease and precision never before attained. Being enlisted in, or confined to, no special interests, but open, on equal terms, to all who choose to employ its aid, the telegraph confers its benefits on every branch of industry, and invigorates every interest, productive, commercial, social, and scientific.

BAKER, SAMUEL, *Portsmouth, New Hampshire*—Inventor.

Sample of work done by a "paying machine;" an invention for tarring the seams of vessels.

[Tarring, or "paying" the seams of vessels, when done by hand, is attended with many difficulties and much waste. The pitch is not properly confined to the seams, but is spread upon the adjoining surface of the planks, and the scraping off of the surplus pitch is a laborious and expensive operation. The machine of this exhibitor is intended to obviate these difficulties. He brings the testimony of officers of the American navy to show that it does its work well, and with a great saving of material and labour. The article exhibited is a specimen of the work done by the machine.

The usual mode of "paying" seams is with a mop. A syringe has also been employed.—S.]

2 AMOSKEAG MANUFACTURING COMPANY, *Manchester, New Hampshire*—Producer.

Cotton cloth, including ticking, sheeting, striped shirting, bleached flannel, and drilling.

[The Amoskeag Manufacturing Company is one of the oldest establishments in the United States for the manufacture of cotton goods. It has 62,000 spindles, making about No. 15 yarn; 1,645 looms, which weave 20,000,000 yards per annum. The number of operatives employed is 2,500.

In addition to the cotton-mills, the same Company have an extensive machine-shop, employing 500 hands.

The cotton goods made are sheetings, drillings, cotton flannels, tickings, &c. The samples exhibited are taken from the stock on hand, not manufactured for the occasion.—S.]

3 EASTMAN, ROBERT, *Concord, New Hampshire*—Inventor.

Stone-dressing machine.

This machine is intended to substitute mechanical for hand labour in dressing stone for architectural purposes.

[By a peculiar process of "chilling," in casting, iron acquires an intense hardness, that adapts it for reducing the surface of stone. Cutters made by this process retain their sharpness for a long time. In this machine the stone to be dressed is passed under a series of revolving burrs, or cutters, the various shapes of which are so regulated as to impart to it the required form. The great expense of hand-dressing stone has proved an obstacle in the way of its more general introduction as a building material, which the judicious application of machinery to the purpose will tend to remove. The machine of the exhibitor will be found at work in the department of Machinery in Motion.—S.]

4 HAUEL, JULES, *Philadelphia, Pennsylvania*—Manufacturer.

Perfumery and fancy soaps.

5 SPRATT, JAMES, *Cincinnati, Ohio*—Inventor.

Lightning-rods, points, and insulators.

[To attain a large surface, strength and facility of bending, together with economy of material, are the objects to be aimed at in the construction of lightning-rods. The rods here exhibited accomplish these objects by the following arrangements. They are, in cross section, a small cylinder, with four or more flanges or radii. This form secures a large surface, with small expenditure of metal. Stiffness is secured by twisting the rod. The points are surrounded at their base by three regular gold-plated cast-steel negative magnets, and one is secured to the brass connection at every joint, thus affording further means of favouring the silent discharge. Zinc rings, between or encircling the joints of the metal are used for the important purpose of preventing oxidation, so as to preserve the brightness of the points and upper portion of the rod.

The fastenings and insulators are a convenient contrivance for attaching the rod in such a way that it can be displaced without removing them from the buildings.]

6 HEATH, GABRIEL, *Delhi, Ohio*—Producer.

Specimen of Indian corn.

7 LOUDERBACK, M. J., *Cincinnati, Ohio.*

Specimens of preserved peaches.

8 MOOKLAR & CHILES, *Cincinnati, Ohio*—Producers.

Specimens of leaf and roll tobacco.

9 HUNTER, WM. M., *Cincinnati, Ohio*—Inventor.

Artificial teeth on an improved principle.

10 SHEPHERD, R. A. J., *Cincinnati, Ohio*—Manufacturer.

A shirt.

11 YEATMAN, T. H., *Cincinnati, Ohio*—Producer.

Specimens of American Catawba wine.

12 BUCHANAN, R., *Cincinnati, Ohio*—Producer.

Specimen of Catawba wine.

13 CORNEAU & SON, *Cincinnati, Ohio*—Producers.

Specimen of Catawba wine.

[In all essential particulars this wine resembles the German hock or Rhenish wine; is slightly acid in taste, holding in solution a small portion of tartaric acid, which in progress of time is deposited, when the wine becomes more mild and smooth; it is very light, and delicate in flavour.

Most persons upon first trial are disappointed in not finding the Catawba a sweet wine. It may be remarked, that the slightly sub-acid flavour which characterises the Catawba wine is that which constitutes its peculiarity and its merit. With many persons the taste for it is very soon acquired, with others it requires considerable time.]

14 WILLIAMS, N. L., *Cincinnati.*

Hemp-dressing machines.

15 DUHME, H., *Cincinnati, Ohio*—Producer.

Specimen of Catawba wine.

[The Catawba grape is unknown in Europe as a wine-bearing grape. It is extensively cultivated on the banks of the Ohio river, in the neighbourhood of Cincinnati, the chief seat of the wine manufacture in the United States. The wine produced from it resembles the Rhenish wines, and is by some thought to equal them in flavour. The manufacture, though yet in its infancy, is attracting much attention, and growing in importance in America.—S.]

16 HAZART, R., *Cincinnati, Ohio*—Inventor.

Compound microscope.

17 BARNARD, JOHN, *Lanesville, Ohio*—Manufacturer.

Brushes, brooms, and whisks.

18 **Emory, Thomas**, *Cincinnati, Ohio*—Manufacturer.
Lard-Oil and adamantine candles.

[Lard-oil is obtained from lard by means of cold and pressure. The liquid portion, or elaine, is thus separated from the more solid part, the stearine. The latter is the material employed for candles. The United States delivers annually about 8,000 kegs of lard at the port of Liverpool alone. Lard-oil is much used for lamps.—R. E.]

19 **Frank, F.**, *Cincinnati, Ohio*—Manufacturer.
Specimens of lard oil.

20 **McGregor & Lee**, *Cincinnati*—Inventors.
Improved bank lock.

21 **Dominick, George**, *Cincinnati, Ohio*—Manufacturer.
Specimen of beef tallow and lard.

22 **Smith, H. & D.**, *Newark, Ohio*—Producers.
Specimens of flour.

23 **Otis, B. H.**, *Cincinnati, Ohio.*
Morticeing and boring machine.

24 **Ohio State, Board of Agriculture**, *Columbus, Ohio*—Producers.
Samples of Indian corn in the ear, illustrative of the different varieties raised in Ohio.
Samples of corn on the stalk.
Case of specimens, illustrative of the economic geology of Ohio.
Box of malted Indian corn.

[This State (Ohio) is extremely prolific in its agricultural productions. Indian-corn is raised annually in large quantities, and forms an important article of the commerce of the State.]

25 **Moyston, W. A.**, *Columbus, Ohio.*
Buck-eyed squirrel (stuffed).

26 **Thompson, Robert**, *Columbus, Ohio*—Inventor.
Plough.
Surgical instruments.
An invention for teaching the blind to draw and write. It is said to be very simple, and to be applicable to the teaching of geography, mathematics, &c.

27 **Tillinghast, J. B.**, *Steubenville, Ohio*—Inventor.
Patent churn.

[This churn has the ordinary upright shaft, with spokes, made to revolve by a winch-wheel and pinion, and giving a horizontal gyratory motion to the cream. The peculiarity consists in the arrangement of three "cleats" on the interior periphery of the churn, in a spiral direction, each "cleat" being bevelled on the upper side. When turning in one direction, the current of cream is broken up by these cleats, and a violent agitation produced. When turning in the other direction, the bevel tends to quiet the agitation, and to collect the butter, which has been separated by the former process.—S.]

28 **Eaton, Charles L.**, *Columbus, Ohio*—Manufacturer.
Brooms and broom-corn.

29 **Stafford, J. R.**, *Cleveland, Ohio*—Inventor and Manufacturer.
Specimens of steam-dried corn meal.

[It has long been desired to discover a method of preparing the flour of Indian corn which should counteract its tendency to become sour by keeping. By the process of the exhibitor, this desideratum appears to have been attained. Peculiar modes of treatment separate the various parts of the grain from each other; and the drying is effected by passing the flour and other products over metallic cylinders, heated by steam to a moderate temperature. The acid moisture of the flour is thus driven off, and as the drying is performed in small quantities at once, the ventilation of the flour is perfect, and neither its colour nor flavour affected. The expulsion of moisture greatly reduces the bulk of the flour, which is proved by the fact that a barrel will hold from 15 to 25 lbs. more of the dried flour than of that which usually comes from the mill-stones.—S.]

30 **Bartlett, R. M.**, *Cincinnati, Ohio*—Manufacturer.
Commercial and banking tables.

31 **Globe Print Company—Chapin, W. J.**, *Fall River, Massachusetts*—Manufacturer.
Printed calicoes.
These prints are on a cloth containing 60 by 64 picks, averaging about the same count as the British 66's.

[The cloths on which these prints were made were not selected for the purpose of exhibiting samples of American cloth printing: they are not as fine as those usually printed by this Company. The finest are No. 36 yarns, and 72 by 80 picks.

It is about twenty-five years since the first efforts were made to introduce calico printing into the United States.—S.]

32 **Pope, John**, *Memphis, Tennessee*—Producer.
Specimens of ginned cotton.

33 **Jones, White, & M'Curdy**, *Philadelphia, Pennsylvania.*
Artificial teeth and gold foil. Exhibited for their natural appearance, and other qualities.

34 **Billings & Ambrose**, *Claremont, New Hampshire*—Inventors.
Method of connecting hubs and axles.

[This is a convenient method for detaching wheels from axles adapted to light carriages. The band is tight, and gives a neat finish. The nut is operated by a small pocket key, which opens the nut through the centre by one quarter turn of the key, thus releasing the hold upon the axle, which it clasps in a groove turned for that purpose in the outer end of the axle.

Much ingenuity has been devoted to the devising of methods of attaching wheels to axles. The original linch-pin is now almost wholly discarded. The nut and screw has superseded it. Various contrivances have been tried for fastening the wheel to the axle at the shoulder, by rods, screws, &c. The "ball axle," so called from small balls running in corresponding grooves cut in the wheel and axle to receive them, has been attempted.—S.]

35 **Lonsdale Co., Goddard Brothers**, *Providence, Rhode Island*—Manufacturers.
Cotton goods.

36 **Bazin Xavier**, *Philadelphia*—Manufacturer.
Perfumery and soaps.

37 **Bond, Samuel**, *Memphis, Tennessee*—Producer.
Specimen of ginned cotton.

[Cotton is said to be "ginned" when its fibres are separated from the seed, to which they strongly adhere. This is effected by very simple mechanical means. Unless this process were adopted, the presence of the seed would be injurious to the cotton, by communicating to it a disposition to become filled with fungi, and so turn mouldy.—R. E.]

38 **Learned & Reynolds**, *Indianopolis, Indiana.*
Flour extractor.

39 **Palmer, Franklin B.**, *Philadelphia*—Inventor.
Artificial legs.

The peculiarities of this invention consist in: First. An arrangement of springs and cords in the inside of the limb, by which, when the wearer is in an erect position, the limb is extended and the foot flexed, so as to present a natural appearance. Second. By an arrangement of cords and springs in the inside of the limb, the foot and toes are easily and gradually extended, when the heel is placed in contact with the ground. In consequence of this arrangement, the limping gait and the unpleasant noise made by the sudden stroke of the ball of the foot upon the ground in walking, which is so obvious in the ordinary leg, is avoided. Third. By a peculiar arrangement of the knee-joint, it is rendered little liable to wear, and all lateral or rotatory motion is prevented. It is hardly necessary to remark, that any such position is undesirable in an artificial leg, as it renders its support unstable. The pressure of the artificial leg is made uniformly upon the surface of the sides of the stump, and not upon the end, by which arrangement, the danger of ulceration and inflammation of the flaps, covering the end of the bone, are in a great measure avoided. The articulations of knee, ankle, and toes, and in short the *whole limb* is so operated on, that nowhere is there any motion when any two or more pieces of metal are united, and the bolts upon which the joints move, take bearings in solid wood, properly bushed, of about two inches in width, both at knee and ankle, giving the articulations the utmost strength and permanence, and presenting a joint which has been used for two years without need of oil.

A full-length limb for a medium-sized adult may be made to weigh less than 3½ lbs., and one applying below the knee, less than 2 lbs., if the shortness of the stump demands so light a limb.

Stumps of less than 3 inches in length are fitted so as to hide the end of the stump and give perfect use of an artificial joint, without lengthening the thigh enough to be noticeable. In no case does pressure come upon the end of the stump.

The limb is supplied with tendons and springs which imitate nature. These are of great durability, and perform the functions of the tendo Achillis, flexor, and extensor muscles, giving firmness to the articulations, elasticity to the step, and avoiding all concussions of the solid parts at the joints, that otherwise, as in all other substitutes, produce sound, and disagreeable jarring sensations.

The whole exterior is polished with a preparation not before used, which is impervious to water, and gives an enamelled surface to the outer cuticle.

40 **Brown, P. A.**, *Philadelphia, Pennsylvania.*
Specimens of fine wool.

41 **Lacey & Phillips**, *Philadelphia, Pennsylvania*—Manufacturers.

A variety of harness, as specimens of the style used in the United States. Set of double harness. Set of single harness. Set of heavy double harness: the leather is remarkable for pliability, softness, strength, and durability, and was selected from the most perfect hides, and tanned expressly for the Exhibition. The workmanship is of superior character, the object of the manufacturers having been from the outset to combine durability of wear with elegance of appearance. The mountings are of solid silver, heavy, rich, and of beautiful design. The mingling of the British with the American coat of arms appearing on the bridle, saddle, brich-pins, martingales, &c., with the appropriate motto, "Union, peace, prosperity."

42 **Root, M. A.**, *Philadelphia.*
Daguerreotypes.

43 **Wetherill Brothers**, *Philadelphia, Pennsylvania*—Manufacturers.

Chemicals, and samples of white lead.
42 lbs. of pure dry white lead.
17 lbs. of pure dry red lead.
12 lbs. of pure dry orange mineral.
4 lbs. of pure dry chrome yellow.
20 bottles of chemicals.
3 kegs of pure ground white lead.
Specimens of anthracite coal.

44 **Morris, Jones, & Co.**, *Philadelphia, Pennsylvania*—Manufacturers.

Specimens of hanging boiler-plate iron, of first quality, and of hammered bar-iron.

Specimens of the iron ore and limestone used at the furnace, and the pig-iron made from it by charcoal.

Specimens of machine-made cut nails.

45 **Oakford, Charles**, *Philadelphia*—Manufacturer.
Moleskin hats, White Rocky Mountain beaver, and lady's riding-hat.

46 **Cornelius & Co.**, *Philadelphia, Pennsylvania*—Manufacturers.

Two chandeliers. These chandeliers were cast from patterns entirely original and new, at which the artists were employed more than six months. In style they combine the Louis Quatorze and the Renaissance. Each chandelier contains 15 lights, and is covered by a plain ground glass globe. 24 damask solar lamps. These lamps are for burning either lard or oil. They are exhibited for their graceful shape, tasteful ornament, and rich colour. Seven olive solar lamps. Attention is asked towards these lamps, in shape and material not unlike those last described, for the beautiful hue they exhibit. This tint is believed never before to have been produced, and is the result of new chymical combinations, known only to the exhibitors. One of these chandeliers is represented in the illustration on next page.

[These castings and glasses are the product of a branch of manufactures less than 20 years old in the United States. Up to the year 1830, the whole trade in chandeliers was in the hands of foreign importers. At the present time the home market is principally supplied by the house exhibiting these castings.

The lamps are an American invention, adapted to the use of lard and lard oil, constructed upon what is called the solar principle, and admitting a strong draft of air upon the combustion going on. They not only give a more intense light than other lamps, but are economically valuable.]

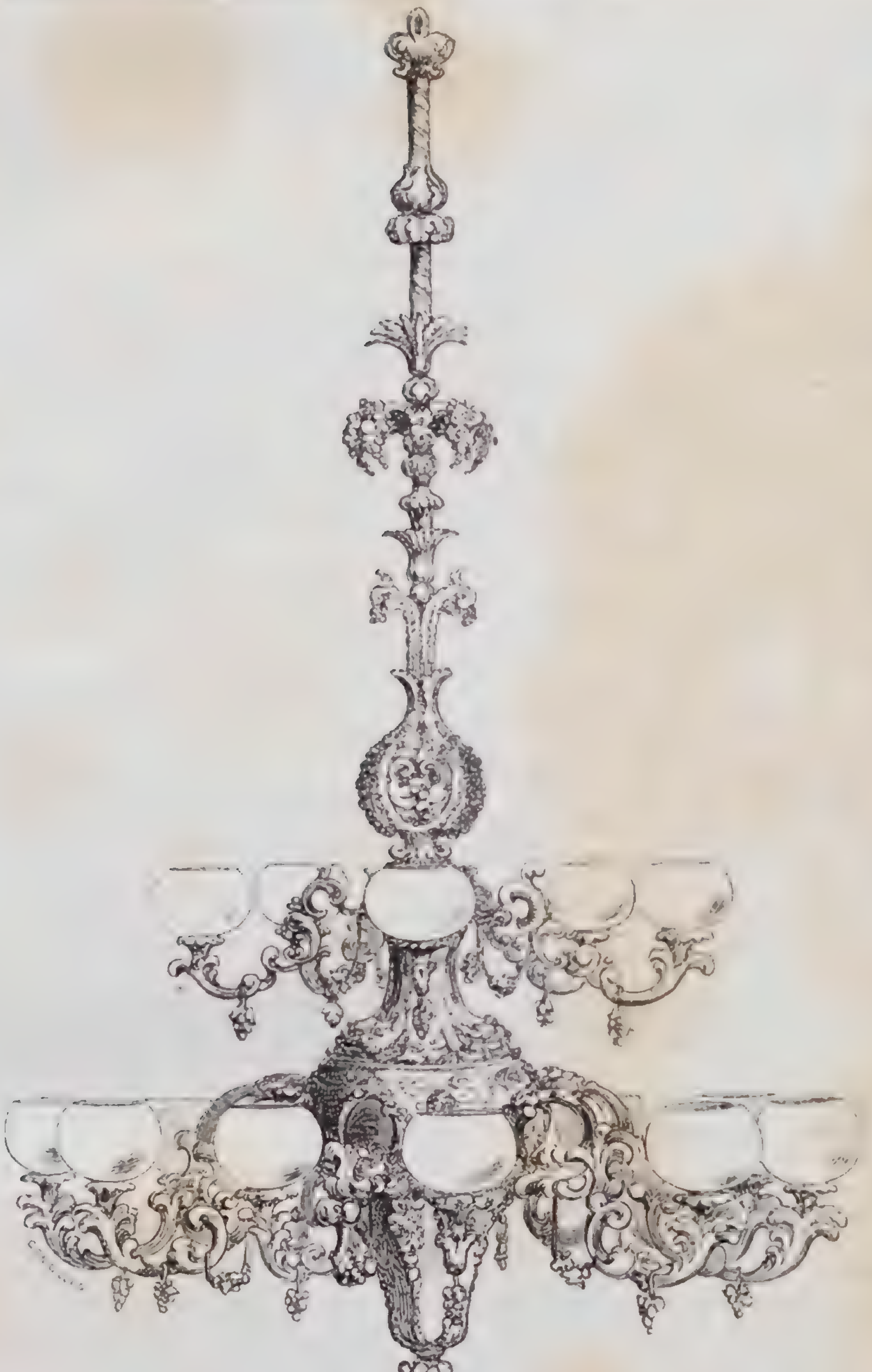
47 **Wardle, S.**, *Philadelphia.*
Artificial block teeth.

48 **Howell & Brothers**, *Philadelphia*—Manufacturers.
Paper-hangings.

49 **Husband, T. J.**, *Philadelphia, Pennsylvania*—Manufacturer.

Specimen of calcined magnesia.

[This magnesia is deprived of carbonic acid and other impurities. Much of the magnesia of commerce is con-



Cornelius's Chandelier.

taminated with iron, lime, and various adulterations. This article is said to be free from unpleasant taste, and of roughness or grittiness.—S.]

50 **Mattson, T. W.**, *Philadelphia*—Manufacturers.
Travelling trunk.

51 **Crawford, H. M.**, *Philadelphia, Pennsylvania*—Manufacturer.

Various calf-skins.

52 **Duval, P. S.**, *Philadelphia*.

Chromo-lithographs and transfers from copper-plates to stone.

[The method of printing in colours is expensive and slow. The design is executed on as many stones as there are colours required to produce the picture. The artist is unable to see the effect of his work until he receives the proof from the printer—practice alone enabling him to judge of the effect to be produced by the union of colours. Great precision is also necessary in the printer, both in placing the colours and in giving them their proper tone—the least variation destroying the intended effect. With proper skill on the part of both artist and printer, pictures may be produced rivalling oil paintings in richness and brilliancy of colouring, as well as in mellowness and gradation of tone.—S.]

53 **Watson, George W.**, *Philadelphia, Pennsylvania*—Manufacturer.

A trotting sulky, intended to exhibit the lightest specimen of work adapted to American use, which in point of workmanship, &c., is limited to its excellence in that particular, but is not designed to exhibit an elaborate finish.

54 **Abbey, Charles, & Son**, *Philadelphia, Pennsylvania*—Manufacturers.

Dentists' fine gold foil. Exhibited for softness, toughness, and uniformity.

55 **Savery, P. B.**, *Philadelphia*—Manufacturer.
Enamelled hollow-ware.

56 **Yeager & Ord**, *Philadelphia, Pennsylvania*—Inventors and Manufacturers.
Artificial leg.

57 **Lippincott, Grambo, & Co.**, *Philadelphia*—Manufacturers.
Various books, and specimens of book-binding.

58 **Hickey & Tull**, *Philadelphia*—Manufacturers.
Two trunks.

59 **Meyer, Conrad**, *Philadelphia*—Manufacturer.
Pianofortes, constructed with iron-plate frames, particularly adapted to damp and warm climates.

These pianofortes are exhibited to show the principle the maker has introduced into his manufacture. He claims to have succeeded, in a considerable degree, in obviating the difficulties usually experienced in removing pianofortes from one climate to another, and to have adopted in their construction a successful method of keeping the instruments in better tune for any period of time.

60 **Simes, Samuel**, *Philadelphia*—Manufacturer.
Samples of cod-liver oil.

61 **Reynolds, R. J.**, *Philadelphia.*
Artificial teeth.

62 **Langenheim, W. F.**, *Philadelphia.*
Photographic magic lantern slides. These slides are produced by the action of light alone on a prepared glass plate, by means of the camera obscura, without the use of the brush; whereby the smallest details are accurately given and fixed on the glass from nature.

[This application of photography is a modification of the Talbotype process, with the substitution of plates of glass for receiving the pristine images upon, in lieu of paper. The delicacy of the outlines, together with the accuracy of the detail of all photographic pictures, appears in great beauty when magnified as they are in the present instance of their application to the magic lantern.—R. E.]

63 **Buckingham, T. L.**, *Philadelphia.*
Artificial teeth, mounted in silver galvanised.

64 **M'Mullen, John**, *Baltimore, Maryland*—Inventor.
Netting machines, with specimens of netting.

65 **Hussey, Obed**, *Baltimore, Maryland*—Inventor.
Reaping and mowing machine.

66 **Detmold, C. E.**, *Lonacoming, Maryland*—Proprietor.
Specimens of pig iron, iron ore, coal, and coke.

67 **Hyde, F.**, *Baltimore, Maryland*—Manufacturer.
Fancy soap.

68 **Chapman, J. L.**, *Baltimore, Maryland*—Manufacturer.
Glass ware.

The glass is made in uncovered pots, without the use of lead or pearlash; and the founding is done by night, in 12 hours.

[In the manufacture of ordinary glass, lead and alkalies are employed as a flux to the other materials. This is considered to render their fusion more ready and complete. The glass in question is characterised, it is stated, by an absence of these ingredients, and under such circumstances the degree of heat necessary to their fusion must have been extremely intense to have effected it in the time stated.—R. E.]

69 **Barlow, Thomas H.**, *Lexington, Kentucky.*
A planetarium.

70 **McCulloch, S. D.**, *Lexington, Kentucky*—Manufacturer.
Specimen of Burrowe's mustard.

[The exhibitor claims to have succeeded in so preparing mustard that it will not be rendered sour by time or climate, but retain its pungency and flavour for any period.—S.]

71 **Coleman, Mrs. C.**, *Louisville, Kentucky.*
Three quilts.

72 **Perry, John G.**, *Narragansett, Rhode Island.*
Meat cutters, adapted to a variety of purposes.

73 **M'Cormick, C. H.**, *Chicago, Illinois*—Inventor.
Virginia grain reaper.

This machine is worked by four horses throughout the day, and it is attended by a man or boy to drive the team, and a man to take the grain from it into gravels of suitable size for binding. Six to eight men are required to bind and shock the wheat. This is the estimated labour of harvesting wheat that stands up and yields from 20 to 30 bushels per acre. If the wheat be heavier and fallen, the operation will be more difficult, and the speed retarded.

This reaper is stated to cut 1½ to 2 acres of wheat or other small grain per hour (equal to 15 or 20 acres per day), to save at least three-fourths of the wheat that would be scattered by ordinary cradling; and it is warranted to be durable. It is constructed to cut as high or as low as required, and the saving of the wheat by it over that cut by the cradle, is estimated at not less than one bushel per acre, and in some situations more; the whole operation being more perfect than can be done by hand labour in any way, and without being materially obstructed by weeds of any kind.

[The following account of this machine is extracted from a published report of its performance on trial by Ph. Pusey, Esq.:—"The machine, drawn by two horses, and carrying two men, a driver and a raker, cut the wheat about eight inches from the ground with the utmost regularity. The exhibitor informed us that, by a slight change of construction, he has made the implement cut two inches nearer the ground. The horses found the work light, though the machine was cutting at the rate of 1½ acre per hour, making 15 acres per day of 10 hours. The raker, standing behind the driver to rake the cut wheat from the platform, certainly had to exert himself; but it is obvious that he and the driver, who has only to sit on the dicky, might very well exchange places from time to time. As one cannot put a high price on the labour of farm-horses at such a time, it is plain that a great saving must be effected by this machine, and every farmer can calculate it for himself, as he will also see the advantage of being rendered independent of the arrival of strangers to get in his corn, who cannot always be found. This trial was witnessed by many farmers, and no fault was found with the work. The land, I should say, however, being stock land, is even; where ridges and water-furrows exist, some difficulties seem to arise. But on this level land it was wonderful to see a new implement working so smoothly, so truly, and in such a masterly manner. The fact is, however, that it is not an untried implement. Though new in this country, it has been used for some years in America, where experience has enabled the inventor to correct, in successive seasons, the defects invariably found in new implements. It is certainly strange that we should not have had it over before, nor indeed should we have it now but for the Great Exhibition, to whose Royal originator the English farmer is clearly indebted for the introduction of the most important addition to farming machinery that has been invented since the threshing-machine first took the place of the flail."—*Extract from the Journal of the Royal Agricultural Society.*]

74 **Peale, Charles W.**, *Hickscherville, Pennsylvania.*

Specimens of anthracite coal.

75 **Senneff, Jacob**, *Philadelphia, Pennsylvania.*

Weaver's heddle.

76 **Avery, Otis, M.D.**, *Honesdale, Pennsylvania.*

Specimens of dentistry.

77 **Wright, W. B. & C. B.**, *Rochester, New York.*

Bevelled sawing machine.

78 **Lloyd, Lyman J.**, *Albany*—Maker.

Harness—exhibited for manufacture.

Lady's whalebone trunk. Gentleman's whalebone trunk. The locks of these trunks are exhibited for novelty of invention.

79 **Dick, D.**, 15 *Buckingham Street, Adelphi, New York*—Importer and Inventor.

Embossing press. Boiler plate, shears, and punch. Bailing press. Rail straightener. Saw-tooth cutter.

Anti-friction machines. Designed and manufactured by J. E. Holmes, of New York.

[The embossing-press exhibited depends for its peculiar principles upon an arrangement of cams, by which a large amount of power is obtained with a comparatively low degree of friction. On the revolution of these cams, the eccentric motion obtained by them is converted into a rectilineal motion, by being communicated by them to the platen of the press, which has an upward and downward movement. The degree of eccentricity of the cam is proportionate to the extent of movement of the platen of the press. A large amount of power is obtained by this means, and the friction of the cams is greatly lessened by a pair of sectors which relieve them at their bearings. The uses to which the press is applied are those of embossing, compressing light goods, as cotton, hay, &c., or for cold-punching or clipping iron plates.—R. E.]

80 **Hurst, James A.**, *Albany, New York.*

Prepared animals, birds, and fishes.

81 **Mott, Charles A.**, *Lansingburgh, New York*—Manufacturer.

Specimens of mineral paints.

82 **Grant, A. T. & Co.**, *Schaghticoke, New York.*

Fanning mill.

83 **New York State Agricultural Society**, *Albany, New York.*

Case of wheat.

Jar of maple sugar.

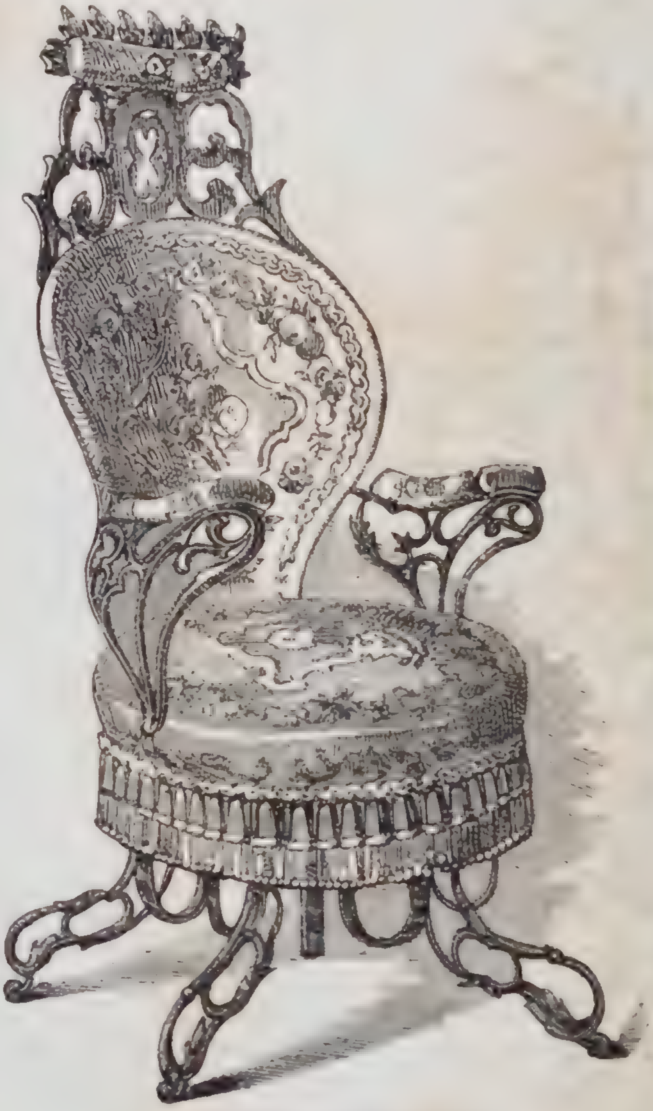
84 **Kirtland, B. B.**, *Greenbush, New York*—Producer.

Sample of Indian corn.

85 **American Chair Company**, *Troy, New York*—Manufacturers.

Chairs with patent centripetal springs and railroad-car seats.

These chairs are constructed in a style peculiarly American. The arrangement of the springs beneath, and the almost universal movement of which they are capable, are new features in their manufacture. One of these chairs is shown in the cut.



Patent Centripetal Spring Chair.

86 **Smith, Leonard**, *Troy, New York*—Inventor.

Smut machine.

87 **Mawson (Brothers)**, *New York.*

Natural-colour American silver-martin muff, victoria boa, and gauntlets, made from the skins of animals abounding in the State of North Carolina. The colours are considered to be very beautiful, the choice of each having been made out of a large number of skins.

88 **Starr, Charles**, *New York*—Inventor.

Two machines to be used in bookbinding; one for backing; the other for finishing the backs. These machines are intended to be kept in operation during the exhibition.

[The machines exhibited are intended for the ornamentation of the covers of books. The machine is extremely powerful, the pressure being gained by a rising and falling iron lever moved by a cam.

A single stroke of the machine effects the embossing of the covers. It is exhibited in motion with the machines of the United Kingdom, Class 6.—R. E.]

89 **Starr, Charles**, *New York.*

Books for the blind: two Bibles.

Quarto Bible, to show the style of work effected by the finishing machine described above.

90 **Pirsson, James**, *New York*—Maker.

Patent double grand pianoforte.

Patent square pianoforte.

This is a patent double grand piano, upon which four performers at a time can execute compositions arranged for eight hands and two pianos. Every other composition, either for one or two pianofortes, may be executed upon the double grand piano with greater effect than upon two of the finest grand pianos. There are several improvements in this construction which may be adapted to any kind of piano, namely, the patent wheel tuning pin, by which a lady may adjust a chord to the utmost nicety, by the use of a small tuning-key and the thumb and finger, or can tune her own piano; also the iron rest-plate and other iron fastenings, which sustain the pressure of the strings entirely independent of the wood-work, and thereby rendering the slightest yielding impossible, thus protecting the sounding-board, by which means the tone of the instrument is preserved, and the chief cause of getting out of tune prevented.

This instrument was selected by Benedict for the use of Jenny Lind's concerts in New York, and was performed upon by himself, the celebrated Timm, Richard Hoffmann and Scharfenberg, in the largest concert-room in the world.

91 **Starbuck, N. B.**, *Troy, New York*—Manufacturer.

Fourteen ploughs.

92 **Page, Ezekiel**, 20 *West Street, New York*, and 38 *Eastern R. R. Wharf, Boston*—Inventor.

Two sweeps, of 36 feet each: made of one stick.

Four oars, of common stock, in the finished state.

Four oars, in the rough state, as left by the machinery.

Pair of oars, decorated: intended as a present for His Royal Highness the Prince of Wales.

Pair of model oars, with pins: intended to be offered to the Lords of the Admiralty.

The exhibitor's patent machinery is in constant operation at two steam factories.

93 **Milward, James, & Son**, *New York*—Inventor.

White Parmela bonnets.

94 **Hotchkiss, Gideon**, *Windsor, New York*—Inventor.

Noddle-iron, tram-block, and bridge-tree, for saw-mills.

95 **St. John, John R.**, *Buffalo, New York.*—Inventor.

Self-determining variation compass. Aquatic velocimeter. Geered hand-log.

The first, the compass, is so constructed, that the deflection of the principal needle is always shown by indicators upon graduated scales. This result is got from the action of two small or satellite needles suspended upon axes fastened in the dirk or compass cord, at equal distances and right angles to the centre of the main needles. The extremities of the graduated arcs or scales are marked with the letters E and W, by which the character of the deflection is known, while the quantity is read upon the scales.

The second, the aquatic velocimeter, gives the true velocity of a vessel through the water, and the aggregate distance traversed at any time, by the position of three hands or indicators upon a dial. The longest hand goes round once in a mile, the next once in a hundred miles, and the shortest once in a thousand miles. The construction of this instrument is as follows: a pipe is inserted through the bottom of the vessel, into which the water rises equal to the draft of the vessel. A frame is prepared, with two pistons fitting the pipe closely. The lower of the two pistons rests upon a flanche inside the pipe. The lower part of the frame drops below the planking, and carries a spiral wheel, where four are placed upon the shaft at an angle to its axis sufficient to turn once in four feet of distance traversed. This motion is communicated to the hands through a train of geerings, by which mechanical certainty of action is obtained.

The third, the geered hand-log, is a modification of the velocimeter, by which the sand-glass, resting upon a lever, connects the run of the log-line, with a hand moving over a dial, and which is disconnected when the sand is "out," leaving the hand resting upon the figures which show the "rate per hour." By this the movement is got from any part of the line, without regard to "stray line."

96 **Mix & Gardinier**, *Schoharie, New York.*

Model of a waggon.

97 **Allen, A. B., & Co.**, *Water Street, New York*—Manufacturers. (Agents in London, Charlwood & Cummins, 14 Tavistock Row.)

Thermometer churn with a double zinc case, into which hot or cold water may be put to regulate the temperature of the cream; a thermometer being attached to show when the proper temperature is attained.

Specimens of the most improved kinds of handled axes for chopping: used in the United States.

Hay-rakes, used in connexion with horse-rakes for gathering hay.

Scythe and sneath, so constructed that the sneath can be adjusted to suit the worker.

Two and three tine hay-forks, for pitching and handling hay, as used in the United States.

Shovel and spade of the pattern which is in common use in the United States.

Manure-forks, 4, 5, 6 tine, of the United States pattern.

Sausage-cutter, No. 1, for making fine mince or sausage meat; it is capable of cutting 100 to 130 pounds per hour.

Sausage-cutter, No. 2; more efficient than No. 1: it has mince knives and pins.

Sausage-stuffer for filling sausages.

Garden-hoe, made from solid steel without welding; in common use for garden and field hoeing in the United States.

Road-scraper, American pattern, for levelling roads, cleansing ditches, digging cellars, excavating, &c.

Post-hole auger, used for setting fences, making holes in the ground for posts, &c.

Indian corn sheller, containing two fly-wheels and friction roller. This machine is used for the purpose of shelling Indian corn from the cob, *i. e.*, separating the grain from the rachis, which it does effectively with little labour at the rate of 200 to 300 bushels per day.

Steel tooth, cast steel, and universal cultivators. Different styles of cultivators, used generally for ploughing between Indian corn and other crops, used as a substitute for the hand-hoe. No. 19 is furnished with mould-boards, which, by transfer from one side to the other, the soil is thrown either to or from the hill: they all contract or expand to suit the width of the rows.

Fan-mill; in common use in the United States.

Portable patent ladder: it closes up as a pole.

Subsoil plough, used to run in the furrow made by the previous plough to break up deep soil.

Ordinary plough, complete; it has attached to it a draught rod and dial elvis, by which the plough may be worked at any required depth, and the team walks clear of the furrow made by the former plough.

Various other ploughs on approved constructions, chiefly for one horse.

98 **Gould, James, & Co.**, *Albany, New York*—Manufacturers.

A pony sleigh.

99 **Chase, Mary W.**, *Chatham, New York.*

An herbarium.

100 **Learned & Thatcher**, *Albany, New York*—Manufacturer.

Chandelier stove for the parlour.

"A golden age" parlour cooking stove.

101 **Dean, Amos, & Co.**, *Albany, New York*—Manufacturer.

Argilla knobs, &c.

102 **Pratt, Zadock**, *Prattsville, New York*—Proprietor.

Samples of leather.

Various specimens of lithography.

[This exhibitor is the proprietor of the largest tanneries in the State of New York. The specimens are from five tanneries owned by him; some were tanned with hemlock bark, and part with oak and hemlock. They are selected from lots tanned during the past year. The following is the list in detail:—

1. *Prattsville Tannery.*—Three sides of sole leather, weight 67 lbs.; sweated and tanned from dry Buenos Ayres hides, with hemlock bark, in four months and twenty-two days. Gain in weight 72 per cent.

2. *Windham Tannery.*—Three sides of sole leather, weight 51½ lbs.; sweated and tanned from English salted slaughter hides, with hemlock bark, in four months and twenty-five days. Gain in weight 57 per cent.

3. *Windham Tannery.*—Three sides of sole leather, weight 79 lbs.; tanned from dry Laguira hides, with hemlock bark, in six months. Gain in weight 73 per cent.

4. *Big Hollow Tannery.*—Three sides of sole leather, weight 50¼ lbs.; sweated and tanned from Rio Grande hides, with hemlock bark, in five months and two days. Gain in weight 63 per cent.

5. *Aldenville Tannery.*—Three sides of sole leather, weight 72¾ lbs.; tanned from Buenos Ayres hides, with hemlock bark, in five months and a half. Gain in weight 62 per cent.

6. *Samsonville Tannery.*—Three sides of sole leather, weight 62½ lbs.; tanned from native slaughter hides, with oak bark, in four months and twenty-seven days. Gain in weight 58 per cent.

7. *Samsonville Tannery.*—Three sides of sole leather, weight 50¾ lbs.; tanned from dry Buenos Ayres hides, with hemlock bark, in four months and three days. Gain in weight 64 per cent.

8. *Samsonville Tannery.*—Three butts, weight 89¼ lbs.; tanned from New York city salted slaughter hides, with oak and hemlock bark, in five months and twenty-six days.

9. Samples of hemlock bark, used in tanning sole leather at the tanneries of the exhibitor. The bark was peeled in the months of May and June, and weighs, when dry, about 2,200 lbs. per cord. A cord of the bark will tan from 190 to 200 lbs. of leather.

10. A lithographic view of the village of Prattsville.

11. A portrait of the proprietor.]

102a **Browne, Peter A.**, *Philadelphia, Pennsylvania*—Producer.

Specimen of fine wool.

103 **Bell, Thomas**, *Morrisania, New York*—Producer.

Farm products:—Spring wheat; soule wheat; Mediterranean wheat; Bald white flint wheat; barley; rye; buckwheat; oats; Indian corn; Indian corn in the ear; broom corn; flax, millet, clover, and timothy grass seeds.

Groom brush.

104 **Oswego Starch Factory**, *Oswego, New York*—Manufacturer.

Sample of starch manufactured from Indian corn.

[Starch enters largely into the composition of the seeds of all cereal plants. It is separable from the gluten with which it is combined by washing in cold water. The starch granules being insoluble, are in this manner removed from the particles of gluten which are partly soluble, and form a viscid mass. In some processes, a weak alkaline solution is used to separate the starch from the gluten. In Great Britain the potato is the principal source of this substance.—R. E.]

105 **Evans, O. B.**, *Buffalo, New York.*

Specimens of daguerreotyping.

106 **Peter, S. T. C.**, *Darien, New York*—Producer.

Specimens of Saxony wool.

107 **Wells, Levi**, *Rochester, New York*—Manufacturer.

Agricultural implements. Wheel cultivator, used to prepare land for wheat, by one ploughing only. It is said to be managed easily, by setting the handle to adapt it to any depth; it is also used for exterminating weeds, Canada thistles, &c.

[The wheel cultivator is so constructed, that it can be regulated to go to any depth required, by means of handles attached to the axletrees, and thus either plough up the ground thoroughly, or only stir the surface. The wheels are 32 inches diameter. The body is a stout frame, with two rows of teeth, three before and four behind. A tongue is firmly attached to the frame, and serves to guide and steady it when in operation. The teeth are cast 14 inches long, and so formed as to wear sharp.—S.]

108 **Leask, Mrs. J.**, *Albany, New York*—Maker.

Needlework:—Satin patch-work, cradle-quilt. Satin nursery-basket. Merino embroidered under-shirt. Merino embroidered sack. Linen stitched and corded slip. Cambric shirt. Infant's fancy cap. Pair of infant's embroidered boots. Infant's satin quilted hood. Mourning collar and cuffs, with leaves. Mourning collar and cuffs on silk lace. Collar and cuffs, for deep mourning. Widow's mourning-cap. Fluted simple mourning-cap. Mourning-cap corded with gosettes. Polka dress-cap, with narrow white satin ribbon. Polka dress-cap, with narrow white satin piping.

109 **Meade Brothers**, *New York.*

Daguerreotypes.

110 **Brown, Gardner S.**, *New York*—Inventor.

Specimens of body braces.

111 **Fenn, John**, *New York*—Manufacturer.

Ivory articles:—One comb, having 150 teeth in the inch, cut by manual labour. Exhibited for workmanship.

112 **New York State Institute for the Blind**, *New York.*

Willow, bead, silk work, &c., manufactured by the blind.

113 **Brooklyn Flint Glass Co.**, *Brooklyn, New York*—Manufacturers.

Specimens of flint glass.

114 **Hecker & Brother**, *Croton Mills, New York*—Producers.

Twenty boxes of farina, prepared from wheat. It is valued as food for infants and invalids.

Two boxes of samp, a preparation from Indian corn. It is extensively used in the United States of North America in preference to rice.

Samples of fine and coarse hominy.

Samples of flour, from wheat grown in the Genessee Valley, in the State of New York.

Sample of baker's flour, made from wheat known in America as Mediterranean wheat, a sample of which is exhibited.

Glass jars, containing samples of the grain from which the above flours are manufactured. Grown in the State of New York.

115 **Pell, Robert J.**, *Pelham, New York.*

Specimens of American forest and other woods.

116 **Jeffers, William H.**, *New York*—Maker.
Cork-sole gaiter-boots.
Well-stitched back-part gaiter-boots.
Heeled gaiters. Set seats sandal gaiters.
White satin gaiters, stitched back parts.
Red and embroidered morning satin slippers.

117 **Tuckerman, E. G.**, *New York*—Proprietor.
Model of a machine for tempering saws.

118 **Jennings & Co.**, *New York*—Maker.
Black dress-coat (American cloth).
Black cassimere pantaloons (American doeskin).

119 **Simmons & Co.**, *New York*—Manufacturers.
Specimens of axes and edge tools.

[These tools are from one of the oldest and largest manufacturers in the United States. They make daily—100 dozen chopping axes, 6 dozen broad axes, 5 dozen adzes, 6 dozen Spanish axes, and 30 dozen hatchets.—S.]

120 **Chevalier, John D.**, *New York*—Maker.
Dental instruments.

121 **Seabury, J. & J. L.**, *New York*—Manufacturers.
Stove polish.

122 **Putnam, G. P.**, *New York*.
Books, and specimens of binding.

123 **Walker, Edward, & Co.**, *New York*.
Specimens of printing and binding.
A Bible, in two volumes.

This Bible, in two volumes, from the foundation of the binding, has been carefully executed, especially as regards the flexible backs. One hundred and twelve engravings are in the books, which are all guarded on satin, preventing the plate paper from cracking, and at the same time making an easy hinge for the engravings to open upon. Every signature or section is sewed with strong silk and bound round the bands from end to end, making it a very elaborate piece of sewing. The volumes are also forwarded in the most flexible style, in reference to the backs, so that if the backs are turned inside out they will return without the slightest injury.

The style is antique, one volume bearing the model of the tower of Magdalen College, Oxford. There is one especial feature in this Bible deserving notice: the family record, which is altogether on a new plan, being inserted in the lids, each lid containing two original designs.

124 **Herring, Silas C.**, *New York*—Manufacturer.
Salamander safe, Wilder's patent.

The metal portion of these safes consists of stout and tough wrought bar and plate iron, and the space between the outer and inner surfaces is filled with a chemical preparation, which is a good non-conductor of heat. By an improvement upon the original salamander, recently introduced by the present owner of the patent right, the interior is now rendered wholly impervious to damp, and books, papers, and jewellery, might be preserved in one of them any length of time without blemish from mould or mildew.

125 **Gavit, D. E.**, *New York*.
Daguerreotypes.

126 **Atlantic Dock Mills**, *Brooklyn, New York*—Producer.
Specimens of flour and farina from Indian corn.

127 **Rogers, James**, *New York*—Inventor.
Telegraph registers and keys.

128 **Raymond & Schuyler**, *West Farms, New York*—Producer.
Barrel of flour, made from pure Genessee wheat.
Keg of pearl barley.

129 **Commeford & Redgate**, *New York*—Proprietors.
Four light chairs.

130 **Leary & Co.**, *New York*—Maker.
Specimens of hats.

131 **Blakeslee, Joseph**, *North Castle, New York*—Producer.
Samples of Merino wools.

132 **D'Avignon, Francis**, *New York*—Designer.
Specimens of lithography.

133 **Clirehugh, Vair**, *New York*—Manufacturer.
Two gossamer wigs. Two gossamer scalps.

134 **Brown, Levi**, *Brooklyn, New York*—Manufacturer.
Six gold pens and cases.

135 **Woodcock, F.**, *Brooklyn, New York*—Manufacturer.
Specimen of oil floor-cloth.

136 **Frisbie, M. J.**, *New York*—Manufacturer.
Specimens of India-rubber shoes.

137 **Brady, M. B.**, *New York*.
Daguerreotypes: likenesses of illustrious Americans.

138 **Arrowsmith, George A.**, *New York*—Proprietor.
Jenning's permutation locks.

[The principle of this lock consists in a series of rotary permutation discs or plates, unaided by springs or tumblers, which, in locking, may be changed millions of different ways, at the option of the owner; thereby destroying any knowledge previously obtained of the interior arrangements, and preventing the use of false keys or picks. It is said to be impregnable by gunpowder, or other explosive force, introduced by the keyhole.]

139 **Dix, E. R.**, *Vernon, New York*—Producer.
Farm products, being specimens of North American guano, Indian corn, wheat, maple sugar, flax, hemp, &c.

140 **Gwynne, James Stuart**, *New York, and* 1 *Agar Street, Strand, London*—Inventor and Manufacturer.
Patent balanced centrifugal pumps, invented by the exhibitor.

[This pump has a rotary movement, and is without valves, eccentrics, or other contrivances which consume power by friction. It is stated that these pumps will discharge a quantity of water fully equal to 90 per cent. of the driving power. It is useful as a fire-engine, from the great distance to which it will force water; it is adapted to the elevation of water to great heights; and as the flow of its jet or column is continuous, shocks and loss of power are prevented without the use of air-vessels. Is said to be not liable to deterioration by sand, mud, or other foreign matters in the water. They are used in America for various purposes, and made of sizes capable of raising from 25 to 100,000 gallons per minute.]

141 Cochran, John W., *New York*—Inventor.
Brick machine.

142 Brady, D'Avignon, & Lester, *New York*—Proprietors.

One volume, entitled "Gallery of Illustrious Americans," a specimen of lithography, letter-press, and binding.

143 Sherman & Smith, *New York*.
Map of the United States.

144 Griffin, Daniel, *New York*.
Model of a water-wheel, furnaces, &c.

145 Bullock, S. W. & J., *New York*.
Self-operating oil press.

146 Erricsson, J., *New York*—Inventor.
Nautical instruments.

1. The Distance Instrument, for measuring distances at sea.

This instrument is principally intended for the use of the naval officer in measuring the distance of an enemy's ship, to enable him to elevate his guns with precision. Modern naval tactics being, in accordance with the refinement of the age, principally based on distant firing, an accurate knowledge of the object to be aimed at becomes indispensable. Any device for obtaining it, based on any process of calculation, is evidently out of the question, considering that a single minute will bring two approaching vessels, moving at a rate of ten knots, full a quarter of a mile nearer each other. In firing beyond point-blank range, therefore, seconds are precious in determining the elevation of the guns; accordingly, nothing will answer short of an instrument, which, by a single observation, and the reading off at sight, tells the distance. The instrument under consideration is intended to meet these conditions.

The distance instrument is intended to perform the required computation with unerring certainty whilst the observer measures the angle, and it exhibits the result the instant he has performed his part. The process of measuring the distance consists simply in turning the thumb-screw of the instrument until the reflected water-line of the object observed is brought in a line with the real horizon seen through the object-glass. The point on the scale of the index-plate placed directly under the fixed index shows the distance desired. It must be conceded, on theoretical considerations, that if the base-line be previously known and the instrument made to correspond thereto, the measurement cannot fail to be accurate; but such is the nature of this base-line, that it cannot be previously known; accordingly, a base scale has been introduced, by which the instrument may at all times be made to conform to the variable height of the base. On mathematical considerations, it is obvious, however, that any mode of compensating for variations of the base cannot be carried very far. Index-plates of different graduations will therefore be employed to suit the height of the masts of different classes of vessels, and the base scale only resorted to for compensation to meet irregularities attending on altered draught of water, consequent on diminution of ammunition, stores, &c. At first sight, it would appear that the base employed in this instrument is not sufficiently definite or accurate; on due consideration, however, it will be found to be fully as definite as required.

In the first place, the height of the main-top, cross-tree, or other point of a ship, above the bottom of the keel, may be ascertained to an inch, and when once known, may be recorded, as well as tonnage, length, beam, &c. Secondly, the draught of water amid-ships is always known to a careful commander, within 2 inches or less. The draught of water being deducted from the height above the keel, establishes the altitude above the water-line. The height of the observer's eye, ordinarily 5 feet 6 inches, being next added, determines the base, within an inch or two. So far, then, the accuracy is all that can be desired for practical purposes. The effect of the rolling of the ship, which at sea always takes place to some extent, next demands attention. It would be an extreme case to suppose the observer tossed through an arc of 20 feet whilst taking an observation, viz., 10 feet on each side of the vertical line. On calculation, it will be found that such oscillation would only produce a depression of 6 inches, at the lowest point. Finally, the rising and falling of the ship deserves to be noticed. The vertical movement of the midship body being at all times surprisingly small, will be found quite unimportant at times when the distance instrument is likely to be wanted. Again, as each observation only requires a few seconds, it may be frequently repeated. It is proper to add, that an error of 6 inches, in a base of 100 feet, and which will not ordinarily occur, only causes an error of distance of 9 yards in a mile. An instrument now in the possession of a United States naval officer, and similar to the one now exhibited, but having an index-plate more carefully divided, was tried repeatedly at high-water, from an eminence on shore, the altitude of which was accurately known. The distances of objects at sea were measured with unexpected precision.

2. A Hydrostatic Gauge, and a hydraulic machine for testing the same.

The hydraulic machine is formed of a cylinder of the celebrated Salsbury-Massachusetts iron, well hammered, with hoops of the same material, shrunk on the plunger, which is made of cast-steel, with an enlargement at the upper end, to increase its stability under the hydraulic press, and fitted with a plate for securing the packing leather to the lower end of the plunger. The cylinder is supposed to be charged with water.

The hydrostatic gauge is made entirely of cast-steel, and consists of a cylindrical chamber, with a screw plug at the top; a cup, containing mercury, at the bottom, which communicates with the chamber through a tube supporting it, and provided with a very small passage through its centre, terminating with a lateral branch under the mercury in the cup. The contents of the chamber, including the tube in the stem, being previously ascertained by weighing, as also the contents of the tube by itself, the chamber and tube should be filled with water, freed from air, and the cup charged with mercury. The gauge being then put under pressure, the mercury in the cup will, if the water in the chamber be susceptible of compression, enter the same through the hollow stem, which it will overflow, and then fall to the bottom. On removing the pressure, the expanding water in the chamber will find its way out through the stem, the small quantity of mercury contained in the latter being at the same time forced back into the cup. The gauge should next be withdrawn from the cylinder, and the mercury contained in the chamber emptied out by means of the screw plug, for the purpose of being weighed.

The previously-ascertained contents of the hollow stem should be added to the quantity extracted from the chamber. The relative capacity of the gauge, and the quantity thus ascertained to have entered whilst subjected to pressure, will determine the degree of compression. It will, however, be perceived, that in case the mercury in the gauge should become compressed during the operation, the indication will be erroneous, viz., more mercury will enter than would be the case if such compression did not take place. It is certain that the difference will be very inconsiderable; yet, in order to attain perfect accuracy, a correction should be made, and for that purpose another gauge has been contrived.

The mercurial gauge has also been placed in the Exhibition. This consists of a cylindrical chamber, provided with two conical plugs, one leading into, and the other out of the chamber. The stem for supporting the chamber is provided with a small tube, terminating as in the hydrostatic gauge; a cavity is formed above the chamber. The chamber, cup, and tube, being all charged with mercury, and subjected to pressure, it follows that on removing that pressure, and withdrawing the gauge, mercury will be found lodged in the cavity above the chamber, provided any compression had taken place; the ratio of compression being of course indicated by the quantity of mercury lodged in the cavity. The alteration of the contents of the gauge, consequent on the compression of the very rigid material of which it is composed, will be altogether inappreciable, more particularly because the effect of the compression will produce an increase of capacity in one direction, and a diminution in the other. The hydraulic machine now in the Exhibition was constructed with a view of determining practically the extent of compression of which water is susceptible. The material selected, and the care bestowed on the manufacture of the cylinder, warranted a belief that it would have sustained any pressure which the plunger could receive. On applying a force capable of subjecting the gauge to a pressure of 13,000 atmospheres, it was, however, found that long before the plunger exhibited any signs of yielding, the cylinder opened, and the hoops expanded, so far as to take a permanent set.

The result conclusively established the fact that, under such extreme pressure, the material of which the cylinder is composed becomes so far compressed as to cause an enlargement of the cylinder too great for the elasticity of the metal nearest the bore. To meet this difficulty, the exhibitor has since resorted to a leaden vessel for holding the gauge and the water to be compressed. This vessel enlarges readily as the cylinder expands, but the lead cannot, like water, enter the small fissures produced in the bore of the cylinder, and hence the practically irresistible force attending the entrance of the water is prevented.

The entire strength of the surrounding metal is accordingly brought into action at once, and the gradual separation of the mass prevented, which characterizes the action of fluids in splitting metals.

The sides of the leaden vessel being less than one-quarter of an inch thick, a comparatively small force will bring it within the required less dimensions, as the plunger descends, and the water within becomes compressed.

Besides, the force required for this compression may be ascertained with sufficient accuracy, its use being dispensed with, except the exhibitor is sanguine of being enabled soon to prove the extent to which water may be compressed. The subject is worthy of deep attention, the combination of matter presented in the fluids being most remarkable. With a specific gravity only the twentieth part of gold, they hold, bulk for bulk, more than an equal quantity of caloric with that dense material. Again, whilst so light that no substance once immersed can ever rise from their surface, except in an aeriform state, they resist pressure with nearly equal force to the metals themselves.

3. The Reciprocating Fluid Metre.

The principal object of this metre is that of measuring the quantity of water which passes through pipes during definite periods. The accuracy of the instrument having been well established by actual trial, the Directors of the celebrated Croton aqueduct, New York, have recently adopted it for measuring the quantity of water consumed by the principal manufacturing establishments, the intention being to apply this metre wherever the Croton water is consumed, with a view of changing the present mode of levying water-rate, as well as preventing the existing extraordinary waste of water. This metre works in the medium to be measured. Numerous practical difficulties are avoided by this expedient; such as tight joints, lubrication, strain on the working parts and packings, &c. The admeasurement is effected by two double-acting plungers, connected to cranks placed at right angles. The most important feature of the movement consists in checking the motion of the plungers before the cranks reach full up-and-down stroke, which is effected by stops operating directly on the plungers.

The speed being about 12 turns per minute, each metre measures off the following quantities, viz., the 5-inch, 1,200; the 9-inch, 6,000; and the 21-inch, 70,000 cubic feet in 24 hours. An ordinary register is applied to these metres, locked up and set once a-year, indicating at all times the quantity of water passed through. It is asserted that no previous mode of measuring fluids in large quantities can compare in accuracy to this metre.

4. The Alarm Barometer.

The advantages attending the employment of the barometer for naval purposes are now fully appreciated by seamen. The instances of danger averted by paying attention to this truthful monitor are too numerous to be recorded. But its indication is silent, and therefore demands a degree of watchfulness incompatible with the duties of the sailor. To secure to him the full benefit of the marine barometer, and to enable him to dispense with precautions at night which impede his progress, and to give security at all times, is the object of the alarm barometer. The leading feature of this instrument consists in this, that whenever the mercury sinks below any given altitude, the falling of the column causes a gong to be struck. The instrument being placed in the vicinity of the helm, and within the hearing of the helmsman—who is never off his post—the alarm will be instantly reported by him, and the dangers of the approaching storm averted by the usual precautions of taking in sails, &c. The tube of the common barometer is employed, considerably enlarged at the upper end; the lower end terminating in a semi-globular cup, containing mercury. The object of the enlargement is, that a slight fall of the barometric column may discharge a considerable quantity of mercury into the cup, which is attached to one end of a lever, whilst a weight is applied at the other. As the mercury in its descent flows into the cup, the balance of the lever becomes disturbed, a catch which holds a hammer is thereby disengaged, and the hammer, impelled by a spring, strikes a gong with the necessary force. The weight which balances the cup is made adjustable upon the lever, and may be so set that the hammer shall strike whenever the mercury shall fall to any given point in the scale previously determined. The lever is marked with divisions corresponding to the barometric scale, to facilitate the adjustment.

5. The Pyrometer.

This instrument is intended as a standard measure of temperature from the freezing point of water up to the melting point of iron; the tension of a permanent volume of atmospheric air or azote, measured by the height of a column of mercury under a vacuum, being the indicator. For the sake of uniformity, the freezing and boiling points of water are fixed at 32° and 212° respectively. The indications of this proposed standard will accordingly bear a direct relation to the Fahrenheit scale.

6. Rotary Fluid Meter.

The principle of which is that of measuring fluids by the velocity with which they pass through apertures of definite dimensions. The idea of measuring fluids in this manner is by no means original, nor does the principle at first sight promise the attainment of any high degree of accuracy. A consideration of the means here adopted will, however, show that the admeasurement will be as accurate as any practical purpose requires. The leading feature of the machine consists in this—that the fluid to be measured is made to enter and leave a circular channel, through apertures of precisely equal dimensions, and that, in passing through, it imparts motion to a paddle-wheel, which moves freely in said channel; this latter being contracted for about one-fifth of the circle. The contracted part of the channel is made only sufficiently large for the paddles to pass without touching, whilst the opposite portion is of such dimensions that its sectional area shall be precisely equal to the area of the contraction added to the area of either of the apertures through which the fluid enters and leaves. This meter was originally designed for measuring fluids alone; recent experiments, however, indicate that it will be equally applicable for measuring, on a large scale, air or gas.

7. The Sea Lead.

The object of this instrument is that of taking soundings at sea without rounding the vessel to the wind, and independently of the length of the lead-line. It is a modification of an instrument contrived several years ago, in conjunction with Francis B. Ogden, Esq., United States consul at Liverpool.

In common with the original instrument, the indication of the sea lead is based on the pressure of the sea, which for each succeeding fathom in depth increases in a definite, and, practically considered, direct ratio. On the lead being hauled in, the height of the water in the glass tubes of the instrument indicates the number of fathoms below the surface of the sea reached by the lead. By means of tallow, applied in the usual manner, it will be seen whether the lead had touched bottom, or not. It is at all times inconvenient, and attended with loss of time, to cast the ordinary deep-sea lead; but at night, in narrow channels, when accurate soundings are most needed, the rounding the ship to the wind becomes dangerous. The instances are not unfrequent of ships having overrun their reckoning, being lost on the coasts, because their commanders, anxious to make quick passages, could not afford to lose the time required in taking soundings on the old plan.

8. Dunn's Patent Caloric Engine. (Patent dated December 26, 1850. Specification enrolled June 26, 1851).

This invention consists in producing motive power by the application of caloric to atmospheric air, or other permanent gases or fluids susceptible of considerable expansion by the increase of temperature; the mode of applying the caloric being such that, after having caused the expansion or dilatation which produces the motive power, the caloric is transferred to certain metallic substances, and again re-transferred from these substances to the acting medium at certain intervals, or at each successive stroke of the motive engine; the principal supply of caloric being thereby rendered independent of combustion or consumption of fuel. Accordingly, whilst in the steam-engine the caloric is constantly wasted by being passed into the condenser, or by being carried off into the atmosphere, in the improved engine, the caloric is employed over and over again, enabling me to dispense with the employment of combustibles, excepting for the purposes of restoring the heat lost by the expansion of the acting medium, and that lost by radiation also, and for the purpose of making good the small deficiency unavoidable in the transfer of the caloric.

Figs. 1 and 2 represent longitudinal sections of the engine, both being alike in all essential points, differing only in part of the detail. Fig. 1: A and B are two cylinders of unequal diameter, accurately bored and provided with pistons *a* and *b*; the latter having air-tight metallic packing rings inserted at their circumferences. A is the supply cylinder, and B the working cylinder; *a′* piston rod attached to the piston *a*, working through a stuffing box in the cover of the supply cylinder. C is a cylinder with a spherical bottom attached to the working cylinder at *c c*, I call this vessel the expansion heater; D D rods or braces connecting together the supply piston *a* and the working piston *b*. E is a self-acting valve opening inwards to the supply cylinder; F a similar valve opening outwards from said cylinder, and contained within the valve-box *f*. G is a cylindrical vessel, which I call the receiver, connected to the valve-box *f* by means of the pipe *g*; H a cylindrical vessel with an inverted spherical bottom; I call this vessel the heater. J a conical valve, supported by the valve stem *j*, and working in the valve chamber J′, which chamber also forms a communication between the expansion heater C and heater H by means of the passage *h*. K is another conical valve supported by the hollow valve stem *k*, and contained within the valve chamber *k′*. L and M two vessels of cubical form, filled to their utmost capacity, excepting small spaces at top and bottom, with discs of wire-net or straight wires closely packed, or with other small metallic substances, or mineral substances such as asbestos, so arranged as to have minute channels running up and down. These vessels L and M, with their contents, are called regenerators. *l l*, *m m*, pipes forming a direct communication between the receiver G and the heater H, through the regenerators. N N two ordinary slide valves arranged to form alternate communications between the pipes *l l* and *m m* and the exhaust chambers O and P, on the principle of the valves of ordinary high-pressure steam-engines. *n n* valve stems working through stuffing boxes *n′ n′*. *p* pipe communicating between the valve chamber *k* and exhaust chamber P. *o′* pipe leading from exhaust chamber O. Q pipe leading into the receiver G, provided with a stop-cock *q*. R R fire-places for heating the vessels H and C. *r*, *r*, *r*, *r*, flues leading from said fire-places, and terminating at *r′*. S a cylindrical vessel attached to the working piston *b*, having a spherical bottom corresponding to the expansion vessel C. This vessel S, the heat-intercepting vessel, is to be filled with fire-clay at the bottom, and ashes, charcoal, or other non-conducting substances towards the top; its object being to prevent any intense or injurious heat from reaching the working piston and cylinder. T T brick-work, or other fire-proof material, surrounding the fire-places and heaters.

Fig. 2. All corresponding parts in this Figure are marked by similar letters of reference as in Fig. 1; it will, however, be well briefly to repeat the description of the same: A supply cylinder; *a* supply piston; B working cylinder; *b* working piston; C expansion heater; C junction of working cylinder and expansion heater; D rods connecting the supply and working pistons; E inlet valve of supply cylinder; *e* valve chamber of the same; F outlet valve of supply cylinder, and *f* its chamber; G receiver, *g* pipe connecting the same to outlet valve chamber *f*; L regenerator, *l* passage between the same and receiver; *l′* passage between the regenerator and the expansion heater; N′ slide valve, *n* stem or spindle for working the same; O exhaust chamber under the slide valve; O′ outlet pipe; Q pipe leading into receiver, *q* stop-cock in the same; R fire-place; *r*, *r*, *r*, *r*, flues leading from said fire-place; *r′* exit of said flues; T brick-work surrounding the fire-place and flues; U rock shaft, supported at both ends by appropriate pillar-blocks; *u u′* crank lever or arm attached to the said rock shaft; *u″* link connecting said arm to the working piston *b*; V another crank lever or arm attached to the extreme end of the rock shaft; *x* crank shaft or axle, having a crank Y firmly attached; *v* connecting rod connecting the arm V to the crank pin *y* of crank Y; *y′* pillar blocks supporting the crank shaft *x*; Z Z represent the circumference of a fly-wheel, paddle-wheel, propeller, or other rotary instrument to be worked by the engine.

Fig. 3 represents a sectional plan of the Fig. 1, and Fig. 4 a sectional plan of Fig. 2.

Before describing the operation of the improved engine, it will be proper to observe that the piston rod *a′* only receives and transmits the differential force of the piston *b*, viz., the excess of its acting force over the reacting force of piston *a′*: it will also be proper to observe that this differential force imparted to said piston rod may be communicated to machinery by any of the ordinary means, such as links, connecting rods, and cranks; or it may be transmitted directly, for such purposes as pumping or blowing. The conical valves K and J may be worked by any of the ordinary means, such as eccentrics or cams, provided the means adopted be so arranged that the valve K will commence to open the instant that the piston *b* arrives at the full up-stroke, and be again closed the instant the piston arrives at full down-stroke, whilst the valve J is made to open at the same moment, and to close shortly before or at the termination of the up-stroke. In like manner, the slide valve N′ is to open and close as the piston *b* arrives respectively at its up and down-stroke, similar to the slide valve of an ordinary high-pressure

Fig. 1.

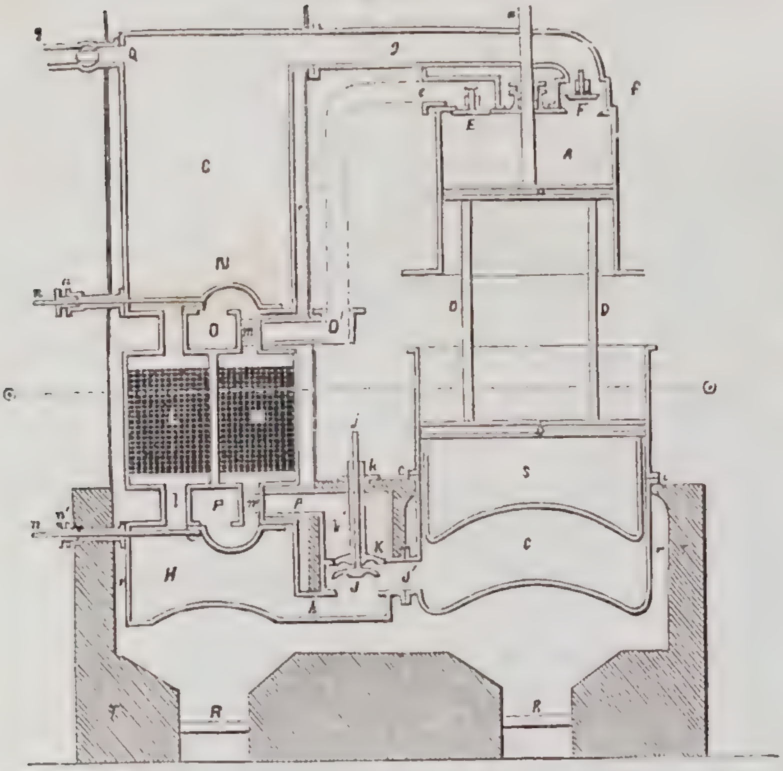


Fig. 3.

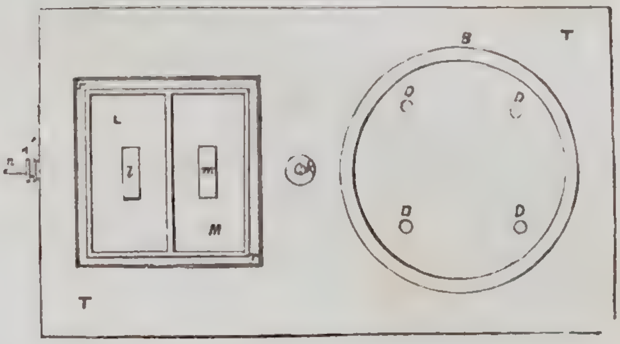


Fig. 2.

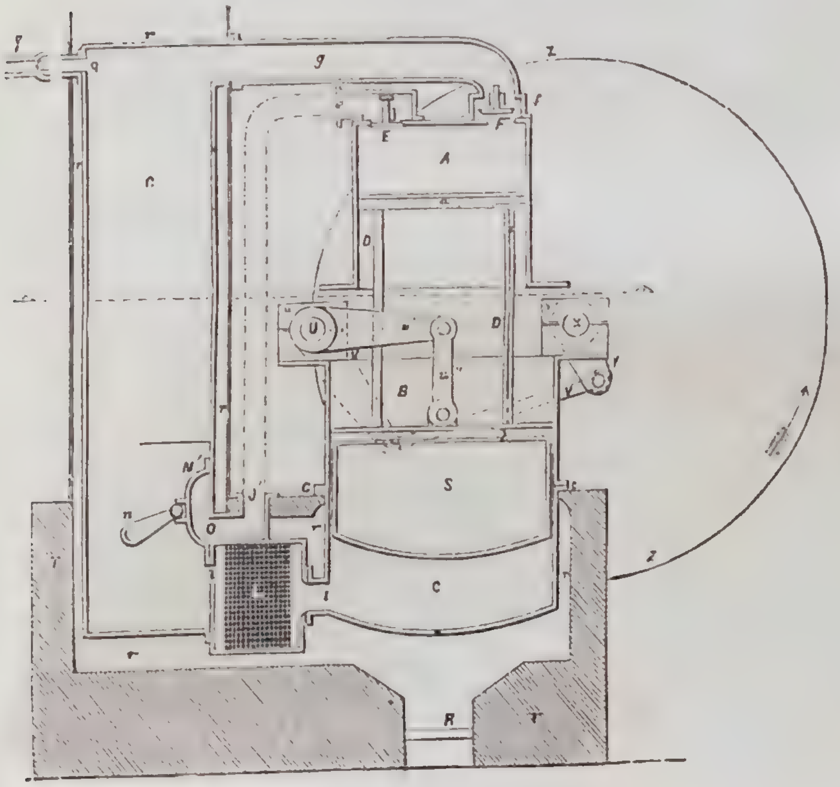
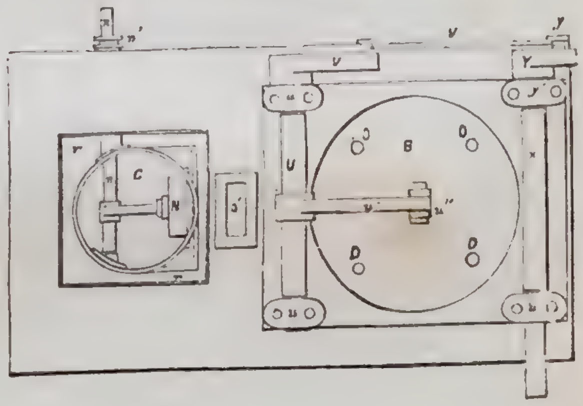


Fig. 4.



engine. It will be seen that the link u'', like the piston rod a', only transmits the differential or useful force of the piston b.

The manner in which the same is to be put into operation, reference being first had to Fig. 1. Before starting, fuel is put into the fire-places R R, and ignited, a slow combustion being kept up until the heaters and lower parts of the regenerators shall have been brought to a temperature of about 500°. By means of a hand-pump, or other similar means, atmospheric air is then to be forced into the receiver G, through the pipe Q, until there is an internal pressure of some eight or ten pounds to the square inch. The valve J is then to be opened, as shown in the engraving, the pressure entering under the piston b will cause the same to move upwards, and the air contained in A will be forced through the valve F into the receiver. The slide valves N N being, by means of the two stems n n, previously so placed that the passages l l are open, the air from the receiver will pass through the wires in L into the heater H, and further into C, the temperature of the air augmenting, and its volume increasing as it passes through the heated wires and heaters. The smaller volume forced from A will in consequence thereof suffice to fill the larger space in C. Before the piston arrives at the top stroke, the valve J will be closed, and at the termination of the stroke the valve K will be opened; the pressure from below being thus removed, the piston will descend, and the heated air in C will pass through k', p, P, and m into the regenerator M, and in its passage through the numerous small spaces or cells formed between the wires part with the caloric, gradually falling in temperature until it passes off at O′, nearly deprived of all its caloric. The commencement of the descent of the piston a will cause the valve F to close, and the valve E to open, by which a fresh charge of atmospheric air is taken into the cylinder A. At the termination of the fall-down stroke, the valve K is closed and the valve J again opened, and thus a continued reciprocating motion kept up. It will be evident that after a certain number of strokes the temperature of the wires or other matter contained in the regenerators will change; that of M will become gradually increased, and that of L diminished. The position of the slide valves N N should therefore be reversed at the termination of every 50 strokes of the engine, more or less, which may be effected either by hand or by a suitable connection to the engine. The position being by either of these means accordingly reversed to that represented in the engraving, the heated air or other medium passing off from C, will now pass through the partially-cooled wires in L, whilst the cold medium from the receiver will pass through the heated wires of M, and on entering H will have attained nearly the desired working temperature. In this manner the regenerators will alternately take up and give out caloric, whereby the circulating medium will principally become heated, independently of any combustion, after the engine shall have been once put in motion.

The said engine, as represented in Fig. 2, is operated precisely in the same manner, excepting that the regenerator is arranged in a single vessel, and that the metallic substances therein take up the caloric from the circulating medium that leaves the working cylinder or vessel C, and returns the same to the circulating medium that enters the working cylinder at each stroke of the engine, instead of transferring and re-transferring the caloric at intervals, as shown in Fig. 1. The manner in which the differential or useful upward force of the working piston b (Fig. 2), in conjunction with its descending power, caused by gravity, are made to impart rotary movement to the crank-shaft x becomes self-evident on examining the disposition of the working gear of the engine, as shown in the engraving. It is particularly worthy of notice that the relative diameter of the supply and working cylinder will depend on the expansibility of the acting medium employed; thus in using atmospheric air or other permanent gases, the difference of the area of the pistons may be nearly as two to one, whilst in using fluids (such as oils, which dilate but slightly), the difference of area should not much exceed one-tenth. In employing any other medium than atmospheric air, it becomes indispensable to connect the outlet pipe O′ and the valve-box e of the outlet valve E, as indicated by dotted lines in both Figs., these dotted lines representing the requisite connecting pipe. The escaping air or fluid at O′ will, when such a connecting pipe has been applied, furnish the supply cylinder independently of other external communication, and the acting medium will perform a continuous circuit through the machine under this arrangement, the operation being in other respects as before described. It is evident that the several parts composing the improved engine may be arranged in various ways, and that the external form thereof may be greatly changed whilst its principle of operation remains substantially as I have ascertained and described. It is also evident that the working cylinder may be placed horizontally or otherwise, and that it may be made double acting, and that a heat-intercepting vessel may be applied at each end of the working piston, and also an expansion heater at each end of the working cylinder.

The novel features in this engine are the regenerator, by which is effected a transfer of the caloric contained in the air or other circulating medium that passes off from the working cylinder to a series of discs of wire net, or to other minute metallic or mineral substances, for the purpose of being again re-transferred to the air or other circulating medium that enters the working cylinder, whether said structure be arranged that the metallic or mineral substances are made to take up and again return the caloric at each successive stroke of the working piston, as in Fig. 2; or whether it is so arranged that the transfer and re-transfer of the caloric takes place at intervals, as in Fig. 1; or whether said structure is arranged in any other manner for the purpose of accomplishing substantially the purposes hereinbefore mentioned.

Second. The combination of the expansion heater with the working cylinder, by which the fall of temperature consequent upon the expansion of the air or other circulating medium during the upward movement of the working piston becomes restored, and by which also the force of said piston becomes augmented beyond what it would be if the accession of caloric effected by the expansion heater did not take place.

Third. The heat-intercepting vessel attached to the working piston, by which any injuriously-high temperature is prevented from reaching the packing of said piston, and by which also the very desirable end is attained of presenting at all times surfaces of uniform high temperature to the acting medium under the working piston.

Fourth. The inverted position and open ends of the working and supply cylinders, as represented in the engraving.

Fifth. The direct attachments of the working and supply pistons, by which not only the acting and re-acting forces may be uniformly distributed over the area of each piston, but by which also the entire differential power of the working piston is rendered available, less only the friction of the packings.

8. Model of an equestrian statue of Washington, by Horace Kneeland, of New York.

147 Iron Bridge Co., *New York*—Proprietor.
An iron bridge.

148 Emory & Co., *Albany, New York.*
Horse-power railroad seed planter.

149 Moore, D. D. T., *Watervliet, New York.*
Corn-brooms.

150 Jeffrey, A., *Canandaguia, New York*—Designer.
Oil paintings of wild flowers of Western New York.

151 Lawrence, M. M., *New York.*
Daguerreotypes.

[A variety of information on this interesting art will be found in Class 10 of the United Kingdom. Every recent process is there exhibited and described.—R. E.]

152 Benjamin, J. R., *New York*—Inventor.
Elastic trusses.

153 Hawes, G. E., *New York.*
Specimens of dentistry.

154 Hotchkiss & Prescott, *Phelps, New York*—Manufacturers.
Sample of kiln-dried Indian meal.

155 Leach, M. S. & H. J., *Lyons, New York*—Manufacturers.
Sample of extra Genessee flour.

156 Hotchkiss, H. G. & L. B., *Lyons, New York*—Manufacturers.
Sample of oil of peppermint.

[This oil, which is of beautiful appearance, is manufactured from a species of mint, said to be a native of Great Britain. It is a perennial plant, about two feet in height, with a creeping root, and quadrangular, channeled, purplish, and hairy stems, which are branched towards the top. The leaves are opposite, petiolate, ovate, serrate, pointed, smoother on the upper than the under surface, and of a dark green colour, paler beneath. The flowers are small, purple, and disposed in terminal obtuse spikes, interrupted below.

In order to maintain the flavour in perfection, it is found necessary to transplant the roots every three years, and to keep the ground well cultivated, and entirely free from grass or weeds. For medicinal use, the plants should be cut in dry weather, about the period of the expansion of the flowers. These appear in August.

The peculiar and well-known taste and smell of peppermint depend on the volatile oil shown by this exhibitor. It is a grateful aromatic stimulant, used in medicine to allay nausea, relieve spasmodic pains, to expel flatus, &c. It is also much employed by the confectioner, on account of its peculiar and grateful flavour.

Peppermint varies very much in the quantity of oil it affords. Four pounds of the fresh herb yield from a drachm and a half to three drachms of oil, of a greenish-yellow colour—rendered colourless when refined for the confectioners' use. It is frequently adulterated by the admixture of fixed oils, resinous substances, and alcohol. The fixed oils are detected by the greasy stain they leave on paper. Both fixed oils and resins are left behind when the adulterated oil is distilled with water. If alcohol is present, the oil becomes milky when agitated with water; and after the separation of the liquids, the water occupies more space, and the oil less than before. The specific gravity may also serve as a test of purity.—S.]

157 Hill, Charles J., & Son, *Rochester, New York*—Manufacturers.

Sample of extra Genesee flour.

158 Harmon, A., *Clifton, New York*—Manufacturer.

Sample of extra Genesee flour.

159 Leech, David, *Leechburgh, Pennsylvania*—Manufacturer.

Samples of wheat flour, ground at the Leechburgh mill, in Armstrong county, Pennsylvania, United States. Belonging to the exhibitor.

160 Tourey, Proff, *Tuscaloosa, Alabama*—Proprietor.

Specimens of minerals.

161 Inslee, J. A., *Lafayette, Indiana.*

Self-weighing grain scales.

162 Gating, R. J., *Indianopolis, Indiana.*

Grain-drill.

163 Missouri Iron Mountain Company, *St. Louis, Missouri*—Proprietor.

Specimens of iron ore, pig metal, and bar iron. The ore is taken from a bed forming the top of a hill, 600 yards from the furnace. The bed is 500 feet from east to west, 400 feet from north to south, and 60 feet thick, and rests upon sandstone. It extends from the sandstone to the surface, in strata varying from two to ten feet in thickness, with thin layers of clay, and occasionally flint interposed. After removing from six inches to three feet of small ore and rubbish, the balance is obtained by blooming.

No. 2 constitutes about two-thirds of the ore. No. 3 is found in nests, scattered through the mine. No 4 makes up the residue. There seems no particular order, each kind being found from the bottom to the top. The machinery for the manufacture of the iron is propelled by water-power, being furnished by a spring 200 yards from the furnace, yielding at the lowest stage 4,500 cubic feet per minute, averaging through the year 6,000 feet. The furnace is 32 feet high, 9 feet bosh, and 24-inch tunnel head, makes 6 tons of metal per day, 1½ tons of ore, and 100 bushels of charcoal to the ton of metal. No. 2 being the kind aimed at, No. 1 is cast in sand, being the runner from the furnace to the moulds. No. 3 works very fast in the forge fire, but does not make a tough iron; it is used in small quantities along with No. 1 and 2.

Thirty lbs. of limestone are used to every 600 lbs. of ore as flat. The bloom-forge—from metal like No. 2, 2,464 lbs. of malleable iron are obtained from 2,800, using 70 bushels charcoal; the metal is worked as it comes from the furnace. A bloom, weighing 250 lbs., is made every hour and a quarter. The anchony forge—from 2,900 lbs. of metal (No. 1 and 2) 2,464 lbs. of anchonies are made, using 80 bushels of charcoal. No. 1 is the tail end of an anchony broken off, drawn and twisted in a smith's forge, to test its toughness. The chafery forge—from 2,464 lbs. of anchonies 2,240 lbs. of bar-iron are made, using 85 bushels of charcoal. Nos. 2 and 3 are specimens of the bar-iron. No. 2 was nicked with a chisel and broken, to show the fibre. No. 3 was bent cold, showing its toughness.

164 Merriwether, J. B., *Montgomery, Alabama*—Producer.

Specimens of cotton, rice, corn, hominy, flour, &c.

165 Gamble & Brothers, J. K., *Philadelphia*—Manufacturers.

Specimens of Morocco leather:—

American dyed black morocco, manufactured from Mexican dry hide goat-skins.

American brushed-grained leather, from the same.

American dyed black morocco, manufactured from Madras or East Indian dry hide goat-skins.

American brushed-grained leather, from the same.

American glazed black kids, manufactured from Curaçoa dry hide goat-skins.

[The manufacture of morocco in the United States is yet in its infancy. It is, however, rapidly increasing, as there are manufactured in the city of Philadelphia above 1,700,000 goat-skins annually. The skins are imported in a dry state from Mexico, the East Indies, Curaçoa, and Buenos Ayres.—S.]

166 New Jersey Exploring and Mining Company, *Newark, New Jersey*—Proprietors. Agent in London, O. Macdaniel, 74 *Albert Street, Mornington Crescent.*

Specimens of zinc and iron ores, and other minerals, &c., found near them.

Specimens of zinc ores:—According to Thomson and Berthier, it is composed of 88 parts oxide of zinc and 12 parts sesquioxide of manganese.

[The large specimen of zinc ore, red oxide of zinc, mounted on a pedestal in the Main Avenue, East, weighs 16,400 lbs. It comes from the Sterling Hill Zinc Mine, belonging to the New Jersey Exploring and Mining Company, situated in Sussex County, in the State of New Jersey, about 50 miles from the city of New York. The property was formerly owned by Lord Sterling, one of the early settlers of the State of New Jersey, and from him the mine takes its name. The locality is one of remarkable interest to the mineralogist, a great variety of minerals being found there in abundance, associated with the red oxide of zinc, such as sapphire, garnets, spinel, franklinite, troostite, &c., in perfect crystallizations, some specimens of which have been also placed in the Exhibition. The geological character of the region is primary, or of a mountainous granitic formation, being a part of the great Mineral Belt, as it is called, of the Atlantic Coast of North America. The zinc ore occurs in white crystalline or altered lime-stone; it is a regularly-formed vein or stratum, with an inclination or dip of about 80 degrees, and is several feet thick at the surface or outcrop. No estimate can be put upon the future value of this mine, as the ore is richer and purer than any known in the world; it is utterly inexhaustible, millions of tons of ore being in sight, above water level, which, to be mined, requires hardly any other means than quarrying!

The massive sample of this ore was got out accidentally, in the ordinary course of mining, at a single blast, from near the surface, on the brow of the range of hills in which the vein outcrops. The mine was opened only last spring, and with a small force nearly 3,000 tons of ore were got out and brought down to the works of the New Jersey Exploring and Mining Company, which are situated on tide water, a few miles from New York. The Morris Canal furnishes ready and cheap transportation for the ore generally; but being closed by ice last season, before it was determined to send this large sample to the Great Exhibition, unusual means had to be adopted to get it to New York, at an expense of about 200*l*. No means of moving a mass of such immense weight being at hand at the mines, a truck of the largest size was sent for the purpose from New York. The first attempt failed, from want of proper apparatus, and the truck returned. A second truck, fitted out completely for the service, was then despatched, the Company having determined to send this fine sample of ore to the Exhibition at any cost. The task was one of greater difficulty than may be supposed, for within 20 miles from the mines three high ranges of mountains were to be crossed; it was mid-winter and the roads were bad, and in some places quite precipitate. Heavy teams of horses and oxen were required to draw the truck up the mountains, and, in descending, it had to be held back by means of strong block-and-tackle rigging, fastened to the trees on the road side. Being thus transported over the mountains, a distance of 20 miles, the ore reached the town of Dover, the terminus of the Morris and Essex Railway, upon which it was brought to the city of New York, a distance of 40 miles. Here it was again placed on the truck, and taken to the Navy Yard at Brooklyn, where it was shipped on board the United States frigate, St. Lawrence. Having been landed safely at Southampton, it was brought to London by rail, without charge, through the very liberal arrangements of the citizens of that town, in regard to articles intended for the Exhibition from the United States.]

Franklinite. An iron ore from the same locality, the constituents of which, according to the above chemical authorities, are 67 parts peroxide of iron, 17 oxide of zinc, 16 sesquioxide of manganese.

Specimens of pure metallic zinc or spelter, the produce of the red oxide of zinc ore.

Zinc white, or white oxide of zinc. It has no offensive smell, and its colour is durable.

Specimens of painting, executed on wood with zinc paints.

167 Trenton Iron Company, *Trenton, New Jersey*—Manufacturer.

Specimens of iron wire, rivets, &c.

168 Heinizch, R., *Newark, New York.*

Shears, trimmers, and scissors.

169 Treese, Thomas, *Greensburg, Pennsylvania.*

Shell propeller.

171 Bryant, William, *Nashville, Tennessee*—Inventor.

Subsoil plough. The model is one-fourth the length, height, &c., of a common one-horse plough. The body of the plough is of cast-iron (in the model it is of brass). The share, or cutter, is made of cast-iron, or of wrought-iron with a steel edge welded to it: the gouge-shape of the point gives greater strength to it, so that a thinner and sharper one can be used. The coulter is of wrought-iron, with a steel edge. The depth of the ploughing is regulated partly by placing the foremost end of the clevice higher or lower; the coulter is set to run deeper or shallower by an adjusting screw on the front prong.

The improvements aimed at in this plough are, correct arrangement, cheapness of construction and of repair, and a more effective ploughing, in consequence of the coulter running in the furrow after the plough, and loosening the subsoil two or three inches (more or less) deeper than common ploughing.

172 Jones, J. V., *Charleston, South Carolina.*

Samples of Upland cotton.

172a Jones, J. R., *Charleston, South Carolina.*

Samples of Upland cotton.

172b Hampton, Wade, *Charleston, South Carolina.*

Sample of Upland cotton.

172c Heriot, E. T., *Charleston, South Carolina.*

Sample of clean rice.

172d Ward, J. J., *Charleston, South Carolina.*

Specimens of sheaf rice.

172e M'Leod, W. W., *Charleston, South Carolina.*

Specimens of Sea Island cotton.

[The cotton derived by this country from the United States is known as *Sea Island* and *Upland*, and the distinction between these varieties is important. The Sea Island cotton derives its name from the nature of the localities in which it is cultivated. This cotton is produced principally in the small sandy islands scattered along the shores of Carolina and also of Virginia. The staple is very fine, long, and even, and it is more readily separated from the reed than that of the Upland cotton. The latter is cultivated in much larger quantities, the exports in 1845 being 863,516,371 lbs., but the staple is inferior in length and evenness to that of the Sea Island growth.—R. E.]

173 Jamison, V. D. V., *Charleston, South Carolina.*

Samples of spirits of turpentine.

174 Capers, Charles B., *St. Helena Island, South Carolina.*

Cypress canoe-boat, formed out of the trunk of a cypress tree—the common boat of the country.

174a Artman, J., *Charleston, South Carolina.*

Phaeton carriage.

175 Graniteville Factory, *Graniteville, South Carolina.*

Specimens of shirting and drilling.

175a Charleston Factory, *Charleston, South Carolina.*

Cotton cloth (shirtings and sheetings).

176 Bell, E. B., *Charleston, South Carolina.*

Specimens of Palmetto cedar, oak, and other woods.

176a De Saussure, J. B., *Charleston, South Carolina*—Producer.

Specimen of sweet gum-wood.

[The sweet gum-tree is the *Liquidambar styracifera*, a large and beautiful tree with a fine-grained wood. It is a native chiefly of the Southern States.—E. F.]

176b South Carolina Railroad Company, *Charleston, South Carolina.*

A circular table.

177 **Mellichamp, Mary H.**, *Charleston, South Carolina.*
A basket.

178 **Nailor, Jefferson**, *Vicksburgh, Mississippi.*
Specimens of cotton.

179 **Mitchell, G. D.**, *Vicksburgh, Mississippi.*
Specimens of cotton.

180 **Maryland Soap-stone Company**, *Baltimore, Maryland*—Producer.

Specimen of soap-stone. One bath tub. Sample of stone. One sizing roll. Three griddles.

[Steatite, called soap-stone, on account of its unctuous feel, is a hydrated silicate of magnesia and alumina. It is much more abundant, and more extensively used in America than in England. That found in the quarries near Baltimore, Maryland, is of superior quality. It is employed for the jambs of fire-places, and in other situations exposed to heat; but one of its most important adaptations is to the making of sizing rolls for cotton-mills. For this purpose it is now much used in the United States. This material is almost as readily worked as the soft woods, and with similar tools. It is applied to many of the purposes of wood, to which, in some cases, its superior durability makes it preferable.—S.]

181 **James & Chapman**, *Crawford County, Missouri.*
Specimens of iron ore and iron work.

182 **Stratton, Wm. J.**, *Glasgow, Howard County, Missouri.*
Specimens of manufactured tobacco.

183 **Albro & Hoyt**, *Elizabethtown, New Jersey*—Manufacturers.
Floor oil-cloth.

184 **Bryant, William**, *Nashville, Tennessee*—Inventor.
Cotton and wool cards

185 **Wright, G. W.**, *California*—Proprietor.
Steam-engine quartz crusher.

[The intention of this machine is to assist in the extraction of grains of gold dispersed in the quartzsose rock of the auriferous districts of California.]

186 **Walbridge, Hiram**—Proprietor.
Specimens of gold and other ores.

187 **Burt, W. A.**, *Mount Vernon, Macomb County, Michigan*—Inventor.
Burt's solar compass.

[The improvements introduced by its inventor tend to render the instrument more simple in its use and more permanent in its adjustments.

The method is susceptible of any degree of accuracy desired. In the model, the principle of reversion is applied throughout, and serves to remove all danger of index-error in any of its adjustments.

In a clear day, in a latitude not yet determined, this instrument, without the use of a telescope, is adequate to the determination of latitude within two minutes, and differences of latitude perhaps to one minute. The line of sight being brought in the direction of an object, and the instrument adjusted for the sun's actual declination and the latitude of the place (determined by a previous culmination of the sun with this instrument), the exact azimuth from the true north or south is read, and the reading of the compass is of no further use than to serve as a check to the comparative azimuth determined astronomically, and also to furnish a permanent record of the variation of the compass for the particular station. The instrument is simple in its construction and use; and requires, when properly understood, no inconvenient expenditure of time: in districts abounding in magnetic iron ore, it is almost indispensable.]

188 **Ewing, J. H.**, *Washington, Pennsylvania*—Proprietor.
Specimens of wools.

189 **Gevelot, —**, *Philadelphia*—Designer.
A medal.

190 **Clinton, Edwin**, *Philadelphia, Pennsylvania.*
Hair and cloth brushes.

191 **Darling, William**, *Reading, Pennsylvania*—Proprietor.
Specimen of iron, and iron ores.

192 **Hopkins, James M.**, *Brock, Pennsylvania.*
Pig of iron.

193 **Ragan, William**, *Philadelphia*—Manufacturer.
Reclining chairs.

[These chairs are intended for the use of invalids, and are so constructed that the degree of inclination is regulated with facility by the weight of the body. A simple ratchet, under the control of the sitter, confines the chair to the desired angle. The simplicity of the construction renders it little liable to get out of order.—S.]

194 **Starr, Edwin**, *Philadelphia, Pennsylvania*—Manufacturer.
Forms of printing bank notes and stereotyping. Specimens of the note, and of electrotyping.

195 **Dunton, J. H.**, *Philadelphia, Pennsylvania*—Manufacturer.
Red cedar bedstead.

196 **Vine & Ashmead**, *Hartford, Connecticut.*
Gold-beating machine and gold leaf.

197 **Sibley, S.**, *Hopkinton, New Hampshire*—Producer.
Sample of Saxony wool from the exhibitor's own flock.

[This article is produced from a flock commenced 30 years ago, and great pains and expense have been bestowed to secure purity of blood and quality of wool. The original stock was the Spanish merino; subsequently, the Saxony breed was gradually substituted. Delicacy of wool has been the primary object.—S.]

198 **Woolman, E.**, *Damascoville, Ohio*—Inventor.
Gate, so constructed as to be opened by a rider without getting off the carriage seat.

199 **Longworth, Nicholas**, *Cincinnati, Ohio*—Producer.
Specimens of Catawba and other wines.

200 **Schooley & Hough**, *Cincinnati, Ohio*—Manufacturers.
Samples of hams and shoulders.

201 **Perkins & Brown**, *Akron, Ohio*—Producers.
Sample of fine combing wool.

202 **Morrell, Stewart, & Co.**, *Cincinnati, Ohio*—Manufacturers.
Sheet-iron made from iron ore the produce of Ohio.

203 **Salt & Mear**, *East Liverpool, Ohio*—Manufacturers.
Water vase, manufactured from fine brick clay.

204 **Schumann, C. A.**, *Cincinnati, Ohio*—Producer.
Specimens of Catawba wine.

205 **Wisdom, Russel, & Whitman**, *Cleveland, Ohio.*
Specimens of curled hair.

206 **Western Fire Company**, *Cincinnati, Ohio*—Proprietors.
Hose carriage.

207 **Trotman, Joseph**, *Cincinnati, Ohio.*
Saddle-trees.

208 **Holbrook & Stanley**, *Cincinnati, Ohio*—Manufacturers.

Winter strained lard oil, made from lard procured from the hog by the action of steam.

[This lard oil is exhibited in the state in which it was expressed from the lard, without having been bleached. It is used for oiling machinery and wool, for burning, and for all other purposes where pure sperm oil is used. It will remain limpid at 33° Fahr., but at 28° it becomes white and thick. After standing in a glass vessel for a length of time, it loses its burning qualities, and will not rise in the wick to supply combustion. By age it fines itself.]

209 **Hugget, J., jun.**, *Columbus, Ohio.*
Joiner's panel or grooving plough.

210 **De Bonneville, M.**, *Providence, Rhode Island.*
Autumnal leaves.

211 **Brett, S. G.**, *Gilmanton, New Hampshire*—Manufacturer.
Shoe-pegs, manufactured by machinery.

212 **Read, Chares A.**, *Oneida County, New York.*
Model of a fluted fulling-mill.

213 **Ross, Charles**, *Rochester, New York*—Inventor.
Improved portable mills.

[This mill, which is adapted to the grinding of grain, paints, salt, &c., consists of a solid cone of burr-stone, revolving on a horizontal shaft, within a stationary concave of the same stone, composed of segments firmly secured in an iron shell. The two surfaces are accurately adjusted, and their distance regulated in the usual manner by an adjusting screw.—S.]

214 **Ambler & Avery**, *New York.*
Artificial incorruptible mineral teeth.

215 **Disturnell, J.**, *New York*—Publisher.
Maps of the United States and of the State of New York.

216 **Brown, Solyman**, *New York.*
Articles for dentistry.

217 **Godwin, Thomas**, *New York*—Inventor.
Specimens of mechanical inventions.

218 **Hiler, Selah**, *New York.*
Stair-rods, copper rivets, &c.

219 **Armstrong, S. T.**, *New York*—Manufacturer.
India-rubber air pontoons.

220 **Alcock, James**, *New York.*
Artificial incorruptible mineral teeth.

221 **Lyon, E.**, *New York*—Inventor and Manufacturer.
Magnetic powder for the destruction of insects.

222 **Brooks, William T.**, *New York*—Proprietor.

Jackson's annunciator. This invention is intended for use in hotels, club-houses, mansions, steam-ships, &c., instead of the complication of bells as at present required for the purpose of signalizing the servants from the different rooms. It is ornamental, and occupies but a small space. Each signal on the dial is distinct and separate, and remains exposed until the object for which it was made is answered. It can be readily attached to the present arrangement for bells, and is now extensively, and almost generally, in use in the United States of America. It does away with the array of bells now in use, substituting in their place a compact piece of furniture, that can be fixed to the wall, or placed upon a stand or table. Its chief excellence consists, however, in its continuing to indicate the number of the room whence the call was made, until the servant has answered it. This of itself is sufficient to give the bell-telegraph an advantage over every other system of the kind ever adopted.

223 **Harrison, C. C.**, *New York.*

Specimens of daguerreotypes, exhibited for sharpness of outline, distinctness, and delicacy of shading. The camera obscuras with which they were taken accompany them. These instruments are exhibited both for their construction, and for the perfect manufacture of their achromatic glasses.

[The accuracy of manipulation in working an achromatic lens is readily tested by the resulting daguerreotype obtained from its employment. A slight departure from the true curve will render the picture ill-defined and imperfect. In order to test the developing and defining powers of a daguerreotype lens, which is most frequently a double achromatic of various diameters, such objects as the human head, or the fur of an animal, or an extremely minutely printed page, are daguerreotyped, and the result pretty accurately indicates the capabilities of the instrument.—R. E.]

224 **Thompson, Wm. M.**, *New York*—Inventor.
Pictorial bookbinders' stamps.

The method employed in the engraving of these stamps gives an effect of light and shade which is said to be almost equal to copperplate engraving. 20,000 copies on dry cloth cases have been taken from some of these specimens before the production of the present impressions.

224a **Griffith, J. W.**, *New York.*
Model of an ocean steamer.
Treatise on Marine and Naval Architecture.

225 **Pooley, S. J.**, *New York*—Manufacturer.
Two miniature dinner sets: one set mounted with pearl shell handles, gold, &c.; the other set, with pearl shell handles.

Dinner set, mounted with pearl handles.

Miscellaneous table knives, carvers, &c., mounted with gold, pearl, &c. Scissors. Pair of forceps. Razors, pearl handles.

Surgical instruments in miniature, mounted with pearl, tortoiseshell, &c. Penknife, with tortoiseshell handle.

227 Thornton, Frances, *New York*—Maker.

Articles in shirt-making and laundry-work.

228 Barton, C. D., *Keesville, New York*—Producer.

Samples of iron ore.

Magnetic oxide of iron from Arnold Mine, Peru, Clinton Co., New York, weighing 600 lbs

Box of magnetic oxide of iron from Barton Ore Bed, in Essex county, weighing 100 lbs.

[The Barton mine is 1,000 feet above the level of Lake Ontario. The vein is 30 feet wide, and the iron produced is good. The ores are magnetic.—S.]

229 Tuckerman, Edward G., *New York*—Proprietor.

Air-exhausted coffin, intended to preserve the dead from putrefaction.

Air-exhausted fruit-box, for preserving fish, fruit, game, &c.

[The principle of the exhaustion of atmospheric air from vessels containing substances liable to undergo decomposition has long been put into actual practice in Great Britain. In Class 3 of the United Kingdom will be found an account of the process employed, by steam heat, accompanying the articles exhibited by the introducer of the process into England. In the instances in question it is not stated whether the exhaustion of air is effected by the vacuum resulting from hermetically closing the vessel at boiling point, or by the mechanical assistance of the air-pump.—R. E.]

230 Pease, Richard H., *Albany, New York*.

Specimens of lithographed engravings.

231 Higginbotham, Lyman C., *Vernon, New York*—Maker.

Miniature steam-engine, made by the exhibitor.

232 Genin, J. N., *New York*—Manufacturer.

Hats and caps.

233 Blake, William, *New York*—Inventor.

Specimens of fire-proof paint.

[This paint is of mineral origin. It is prepared from a peculiar clay found in Sharon County, Ohio. The bed is about 20 feet below the surface, and about 16 feet thick, and lies in a horizontal position between rocky strata. The material has the appearance of the finest indigo. When first taken from the bed, this clay is of the consistence of tallow, but exposure to the air renders it as hard as stone. When it has become hard, it is ground to a fine powder and mixed with oils. It is applied in the usual manner; and when dry affords a water and fire-proof covering to the surface to which it has been applied. It is susceptible of high polish, and is on that account peculiarly fitted for the "priming" of coach bodies. Considerable quantities have been imported into the United Kingdom for coachmakers' use. It has been applied to the surface of iron, and polished and painted in imitation of marble.

The chemical composition is as follows:-

Silica	54·00
Alumina	24·20
Protoxide of iron	12·05
Lime	2·31
Magnesia	2·42
Carbon	1·50
Sulphur	·11
Water	5·00
Loss	·41
	100·00

The demand for this article is steadily increasing: the sales last year are said to have reached 2,000 tons.—S.]

234 Clark, Ralph, *New York*—Manufacturer.

Sample of oatmeal, manufactured at the exhibitor's mills, in Oneida County, New York.

235 Parer & Brown, *Utica, New York*.—Producers.

Bale of fine wool.

236 Allen, George F., *Utica, New York*—Proprietor.

Telescopic rifle.

237 Smead, Charles, *New York*.

House's printing telegraph.

238 Thompson, S. S., *Nantucket, Long Island*—Producer.

Sample of wheat.

[This is a new variety of six-rowed winter wheat, called Golden Australian Wheat.

Upon ground well prepared it should be sown at the rate of 1½ bushel per acre, and ploughed under, or drilled in and covered about 3 inches deep. It should stand until entirely ripe before harvesting. The berry is so covered with the husk that it will not shell.

The exhibitor gives the following account of a crop of this grain raised by him:—

"The wheat was sown September 22, 1849, broad-cast and harrowed in. It was reaped July 15, 1850. It stood until entirely ripe for seed. The yield was 84½ bushels, 4 quarts, and 1 pint, measured in a sealed half-bushel, weighing 63½ lbs. to the bushel. By the statute bushel it measured 89½ bushels."]

239 Ubrici, R. W., *St. Louis, Missouri*—Producer.

Specimens of lead ore.

These specimens were found in Franklin county, in the south-west and south-east fractional quarters (right bank of Menamuck River), section No. 20, township No. 41, containing 152 acres, lying in the state of Missouri, U. S. They were the first specimens found in a lode which was discovered in an opening of a very large limestone cave, about 50 feet below the surface of the ground. The direction of the lode was north and south.

240 Whitman, Ezra, jun., *Baltimore, Maryland*—Inventor.

Railway, horse-power, and straw-cutter.

241 Thompson, Rev. Z., *Burlington, Vermont*.

Specimens of Vermont woods.

242 Cook, James, *Burlington, Vermont*.

Burlington mill cloths.

243 Williams, Mary, *Woodstock, Vermont*.

Vermont autumn leaves.

244 Parmenter, Edward, *Mechanicville, Vermont.*
Specimens of bird's-eye maple veneers.

245 Dean, Leonard, *Manchester, Vermont*—Producer.
Sample of maple sugar, and jug of maple molasses.

[The maple-tree yielding sugar is known by the botanical name *Acer saccharinum.* This tree is abundant in North America, and yields, on being tapped, a quantity of sap holding much sugar in solution. The sap is then boiled down in a rude and simple manner, and the molasses are separated by filtration. Its chemical composition does not differ from the sugar obtained from the cane.—R. E.]

246 Barnes, William, *Rutland, Vermont*—Producer.
Sample of maple sugar in a tin box.

247 Cain, John, *Rutland, Vermont*—Manufacturer.
Samples of slate pencils.

248 Peck, Mrs. C. P., *Burlington, Vermont*—Maker.
Silk hose.

248a Pierce, Mrs. John S., *Burlington*—Maker.
Two silk handkerchiefs.
Two specimens of marble, black and white.

249 Penniman, Udney H., *Colchester, Vermont*—Producer.
Specimen of pure stone lime.

250 Catlin, Henry W., *Burlington, Vermont*—Manufacturer.
Sample of wheat flour.

251 Benjamin, Joseph R., *St. Albans, Vermont*—Inventor.
Specimens of brass spring trusses.

252 M'Lenan, Elijah, *Newbury, Vermont*—Proprietor.
Sample of American polish, supposed to be superior to emery.

[This article is prepared from a calcedonic rock found in the State of Vermont. Silex is its principal constituent. It will cut glass and scratch the hardest steel. The "polish" is an impalpable powder said to rival emery in quality. Its uses are the same as those of emery.—S.]

253 Kitteridge, F. O., *Mount Vernon, New Hampshire.*
Corn-husk mattresses.

254 Remers, Peter, *Pittsburg, Pennsylvania.*
A bust of Bishop Upfold.

255 Hall & Spear, *Pittsburgh, Pennsylvania*—Manufacturers.
An iron centre plough.

256 Eakins, Samuel, *Pittsburg, Pennsylvania.*
Galvanic plastic hydrometer.

257 Baker, Abel, *Honesdale, Pennsylvania.*
A pump.

258 Rogers, C. B., *Philadelphia, Pennsylvania.*
A plough.

259 Brown & Wells, *Philadelphia, Pennsylvania*—Manufacturers.
Specimens of tools.

260 Hart, Montgomery, & Co., *Philadelphia, Pennsylvania*—Manufacturers.
Specimens of paper-hangings.

261 Pulsifer, J. S., *Orwigsburg, Pennsylvania.*
An alphabet.

262 Power & Weightman, *Philadelphia, Pennsylvania*—Manufacturers.
Various chemical preparations.

263 Fisher, Thomas, *Philadelphia*—Inventor.

1. Mathematics optically and logically demonstrated. A series of diagrams and models which, with the necessary explanations, are designed to make mathematical principles. They are intended to accomplish an important saving of time and labour.
2. Dial of the seasons, a chart illustrating the sun's declination at all seasons, with the coincident effects of light and heat on animal and vegetable life in all climates.

A book explanatory of the chart.

[These diagrams are an attempt to make subjects which, in the ordinary way in which they are taught, are difficult and repulsive, attractive and easy of comprehension. The dial of the seasons presents at one view a picture of the animal and vegetable productions of the earth from the equator to the poles, illustrating in a striking manner the effects of climate upon vital development.—S.]

264 Pratt, W. A., & Co., *Richmond, Virginia.*
Daguerreotypes.

265 Robinson, P., *Richmond, Virginia*—Producer.
Specimens of manufactured tobacco.

267 Sims, E. H., *Buckingham County, Virginia*—Producer.
Specimens of iron ore.

268 Hardgrove, T. & Samuel, *Richmond, Virginia*—Producers.
Sample of manufactured tobacco.

269 Braxton, Carter, *Hanover County, Virginia*—Producer.
Specimen of greensand marl.

270 Institute for the Blind, *Stanton, Virginia.*
Specimens of books, types, &c.

271 Cocke, Gen. John H., *Fluvanna County, Virginia*—Proprietor.
Samples of iron ore, soapstone, and other minerals.

273 Dill & Mulcahey, *Richmond, Virginia*—Producers.
Specimen of manufactured tobacco.

274 Sims, E. H., *Buckingham County, Virginia.*
Specimens of roofing slate.

275 Sims, E. H., *Buckingham County, Virginia.*
Slab of slate.

276 Jennings & Claghorn, *Richmond, Virginia*—Manufacturers.
A gentleman's saddle.

277 Hobson, Frederick, *Buckingham County, Virginia.*
Specimens of gold ore.

278 Patteson, Richard S., *Buckingham County, Virginia.*
Specimens of iron ore.

279 Faber, William, *Nelson County, Virginia*—Proprietor.
Specimens of ores.

282 Belvidere Manufacturing Co., *Richmond, Virginia*—Manufacturer.
Envelope paper.

283 Brown, —, *Buckingham County, Virginia.*
Specimen of quartz rock.

284 Grant, James H., *Richmond, Virginia*—Manufacturer.
Specimen of tobacco.

285 Maupin, S., *Richmond, Virginia.*
Specimens of minerals.

286 Farrington, A. C., *Newark, New Jersey*—Proprietor.

Apatite. Some of the specimens exhibited are pure Franklinite iron; other specimens were remarkable for the worst *red short* and *cold short* qualities; which qualities have been entirely removed by a small admixture of this Franklinite in the process of puddling. This mineral contains a large proportion of phosphoric acid, and hence will probably be found valuable as a manure.

287 Dumont, F. S., *Patterson, New Jersey*—Manufacturer.
Silk plush for hats.

288 Morgan, John S., *Tuscumbia, Alabama.*
Specimens of cotton.

289 Collyer, Gov. H. W., *Montgomery, Alabama*—Proprietor.

Minerals, collected and forwarded under the direction of the Governor of the State of Alabama, intended to illustrate the mineral wealth of that state.

290 Steere, Enoch, *Providence, Rhode Island*—Manufacturer.
Blacking.

291 Ambler & Avery, *Honesdale, Pennsylvania.*
Specimens of mechanical dentistry.

292 Taylor, H. P. & W. C., *Philadelphia, Pennsylvania*—Manufacturers.
Transparent soaps, intended to represent stained glass.

293 Fay & Co., J. A., *Norwich, Connecticut.*
Planing moulding machines, &c.

294 Hayward Rubber Co., *Colchester, Connecticut*—Manufacturer.

Specimens of India-rubber boots and shoes.

[The manufacture of India-rubber boots and shoes, in America, is conducted in the very parts whence the material is derived. Persons are employed to go round to the trees (*Siphonia elastica*) yielding this remarkable substance, caoutchouc, in the form of a coagulable milky sap, and to collect the exudations flowing on tapping the stem. The fresh milk thus obtained, is immediately manufactured into boots and shoes, by being applied to a last layer after layer, and exposed to smoke to dry between each application. In a few minutes a pair is completed. The finishing for sale is effected in the towns to which it is exported.—R. E.]

295 Goodyear Rubber Co., *Naugatuck*—Manufacturer.
India-rubber.

296 Penfield & Camp, *Middletown, Connecticut.*
Judd's medicated liquid cuticle.

297 Cochran, John W., Agent, *New York.*
Improved railway switch.

297a Cochran, J. W., *New York.*
Ship-timber sawing machine and stone-dressing machine.

298 Day & Newell, *New York*—Inventors.
"Parautoptic" permutating locks.

The parautoptic permutating lock is characterised by the following peculiarities:—The lock adapts itself to the key in such a manner that whatever may be the arrangement of the bits in the key, the mechanism of the lock adapts itself to it. It is consequently at the pleasure of the owner of the proper key to alter the arrangement of the parts of the key, and constantly to exercise a new distribution of the parts within the lock. By this method great security is given to the lock, and it becomes almost impossible to open it by any but the proper instrument.

299 Lathrop, J., *Le Roy, New York*—Producer.
Samples of Genesee wheat.

300 Finch, Hiram, *Honcoye, New York*—Manufacturer.
Specimen of Genesee wheat flour.

301 Colegate, William, & Co., *New York*—Manufacturers.
Samples of pearl starch.

302 Gray, Dr. J., *New York*—Inventor.
Artificial human eyes.

303 Simmons, Mrs. W., *New York*—Maker.
Millinery.

304 Gardner, J. N., *Troy, New York.*
Specimens of currycombs.

305 Oyler & Anderson, *Lynchburgh, Virginia.*

Samples of tobacco, manufactured out of "natural honey-dew," bright sun-cured leaf, the growth of Roanoke county, Virginia.

[The tobacco produced in the United States is a valuable article of commerce, and is considered to possess superior qualities. The tobacco grown in the state in question and in Maryland has long been held to be the best. It is exported to England in the enormous annual sum of 31,628,886 lbs.—R. E.]

306 Macy, Josiah, & Sons, *New York*—Manufacturers.
Specimens of spermaceti and candles.

307 Pecare & Smith, *New York.*

Self-cocking and repeating pistols, with stocks of ivory and rosewood, mounted with steel and gold.

308 Day, Horace H., *New York*—Manufacturer.
India-rubber manufactures.

[The corrugated fabrics from India-rubber are much employed in the manufacture of shoes. The threads of rubber are prepared for weaving into these fabrics by being wound while stretched with the thread with which they are to be covered. The finished goods have great elasticity in one direction and firmness in the other. —S.]

309 Bourgard, Charles, *New York*—Maker.
Hair work. Hair wig.

310 Colton, J. W., *New York*.
Map of the world.

311 Hannington, W. J., *New York*.
Stained glass: two window heads, portrait size of life, natural colours.
Portraits of George the Fourth and William the Fourth as children playing.
A Newfoundland dog.
A pantographic head: richly-ornamented frames.

312 Boole, Leonard H., *New York*.
Model of a clipper ship.

313 Spaulding, J., *New York*.
A silk quilt.

314 Rousseau, A. J., *Troy, New York*.
Specimens of iron ore.

315 Basham, Frederic, *New York*—Maker.
Plaster model of the Exchange, New York.

316 Holmes, G. L., *Memphis, Tennessee*—Producer.
Samples of ginned cotton.

317 Remsburgh, J., *Fredrick County, Maryland*—Producer.
Specimens of Indian corn and wheat.

318 Cooke, William, & Sons, *Baltimore, Maryland*.
Samples of leaf tobacco.

319 Owens, James, *Ann Arundel County, Missouri*.
Specimens of leaf tobacco.

320 Getsinger, M. R., *Charleston, South Carolina*.
Raised embroidered work. Needlework.

320a Golding, M. C., *Spartanburg, South Carolina*.
Imitation Marseilles quilt; a specimen of needlework by Mrs. Golding.

320b Peckham, James, *Columbia*.
Gold-headed walking-stick, made from the curled hickory, a common forest wood.

320c Swedish Iron Manufacturing Company.
Specimens of iron ore, nails, &c.—Magnetic iron ore $(Fe_3 . O_4)$, adapted for making steel.

320d Seabrook, Wm., *Charleston, South Carolina*.
Sample of Sea Island cotton in seed, and of the long staple, or Sea Island, or black-seed cotton.

320e Horry, W. B. C., *Charleston, South Carolina*.
Sample of Indian corn in the ear.
Sample of grain, commonly called flint corn, averaging about 30 bushels per acre.

320f Tew, Henry S., *Charleston*.
A variety of brooms.

321 Colt, Samuel, *Hartford, Connecticut*—Inventor.
Specimens of fire-arms.

[Among the specimens exhibited are the formidable revolving charge pistols. It has been proved in actual service, that the effectiveness of a troop of horse armed with these weapons, which discharge six shots without reloading, has been tripled.

The following extract from a Report of a Committee appointed by the United States Senate, relates to these weapons:—

"Those repeating arms first constructed by Mr. Colt, were too complicated and easily deranged to be fit for rough service. Previous, however, to the year 1840, they had been so much improved, that many highly-experienced officers recommended their trial in the army and navy, believing them to be admirably adapted for such service. In the progress of improvement, complexity has yielded to simplicity, and delicacy to strength, as appears by the inspection returns of Major Thornton, a member of the Board of Ordnance. He reports that only one pistol failed in the inspection trial out of the last two thousand and eighty-two tested in 1850; and even this failure was attributed to the imperfect metal of the particular arm. These improvements by Mr. Colt in the construction of the repeating arms, have encouraged the department to adopt them gradually into the service—first in the ranger troops employed in Mexico, and afterwards in the mounted riflemen; until at this time they have grown into general favour with the army and country; and there are numerous requisitions for them upon the department, which the government has not the arms to supply.

"On the Texan frontier, and on the several routes to California, the Indian tribes are renewing their murderous warfare, and a general Indian war is likely to ensue, unless bodies of mounted men, efficiently equipped for such service, are employed against them. Experience has proved that it is difficult to contend successfully against savages with the usual arms of mounted men, the ordinary dragoon pistol and Hall's carbine. General Harney, who employed Colt's pistol successfully in Florida, says—'It is the only weapon with which we can hope ever to subdue those wild and daring tribes, unless we can have at least three regiments of dragoons on the Texas frontier alone;' and those officers who have recently returned from the frontier corroborate this statement by declaring, that a dragoon armed with Colt's repeating pistol and a musquetoon, or perhaps Sharp's rifle, would be the most efficient and the most formidable for frontier service; and particularly when encounters with the savages occur, as they generally do, in prairies, defiles, and mountain gorges. The advantages of repeating arms in such encounters are incalculable. A few bold men, well skilled in the use of these weapons, can, under such circumstances, encounter and scatter almost any number of savages."]

322 Havenner, T. H. & Brothers, *Washington, D. C.*—Manufacturers.
Pilot bread, water and soda biscuits.

323 North Wayne Scythe Company, *South Wayne, Massachusetts*—Manufacturer.
Specimens of scythes.

324 Vasselborough Manufacturing Co., *New Vasselborough, Maine*.
Cashmeres from American wool.

325 Warwick & Otey, *Lynchburgh, Virginia*—Producers.
Samples of manufactured tobacco.

326 **Rowe, M. & J. M.**, *Philadelphia, Pennsylvania.*
Brooms and whips.

327 **Pennsylvania Railroad Company**, *Philadelphia, Pennsylvania*—Proprietor.
Model of one span of a wooden viaduct on the Pennsylvanian Railroad across the Susquehanna River.

Scale :—The whole viaduct is 3,670 feet long, having 23 spans similar to the model, each 150 feet in the clear.

Height above low water of the river, 44 feet. Abutments and piers of masonry : rock range work.

This bridge was built in about 18 months, and has been in use two years.

The cost of masonry, was	99,000 dollars.
„ wood and iron work	90,000 „
Total cost of bridge	189,000 „

Chief engineer :—Mr. Edgar Thomson.

Length of road	246¾ miles
Two branches	9½ „
Total length of road and branches	256¼ „

The entire road cost, including interest, 9,680,000 dollars. The eastern division, 140 miles, is in use.

328 **Robbins & Lawrence**, *Windsor, Vermont.*
Rifles : the various parts made to interchange.

329 **Bagby, Gov. A. P.**, *Montgomery.*
Sample of raw cotton.

330 **Lak, David**, *Memphis, Tennessee.*
Samples of ginned cotton.

331 **Holmes, J. E.**, *New York*—Inventor.
Model of a ratchet hoisting machine.

332 **Lee, Wellington**, *New York.*
Specimen of spathic iron ore.

[This invaluable ore, of which Connecticut appears to possess the most remarkable mine in the United States, will justify a more particular and detailed notice in this report, from the fact that it has been overlooked as an iron ore with us nearly to the present time, and still remains in a neglected state. The mine was discovered at a very early period in the history of the State; and the abundance and peculiar properties of the ore excited a high degree of curiosity and expectation. Numerous attempts were made to work it as a silver mine, and immense sums expended without exciting even a suspicion of its value for iron.

Spathic iron is one of the most disguised of all the ores of iron, possessed of economical value. Its high specific gravity, added to the development of iron rust occasioned by exposure to the weather, are the only properties by which its ferruginous character is generally detected. Its name of spathic (or sparry) iron was bestowed in allusion to its brilliant and easily-effected cleavages in three directions, and which result in rhombic fragments of constant dimensions. Its hardness is greater than that of calcareous spar; and its colour, when freshly taken from its repositories, is a light-yellowish grey (357), which passes, however, by exposure to the air, to a reddish brown (358). It is composed of protoxide of iron from 57 to 60 per cent., carbonic acid 34 to 36 per cent., with a proportion of manganese from 0·5 to 1·5, and about the same quantity of lime and magnesia. The lime and magnesia, however, are liable to slight variations in their proportions.

The spathic iron mine in question occurs in a mountain about 350 feet in height, situated on the western bank of Shepang river, in Rosbury, about four miles above its junction with the Housatonic. The mountain is known in the vicinity by the name of Mine-hill. The rock of which it is composed is, for the most part, concealed by a soil supporting a fine growth of hard wood. Wherever the rock makes its appearance, however, it exhibits a remarkable uniformity in character and arrangement. The direction of the strata is nearly N. E. and S. W., with a dip of 25° or 30° to the northwest. The ore occupies a perpendicular vein from six to eight feet in width, cutting directly across the strata; and has been detected at numerous places from the base of the hill near the banks of the river, quite to its summit, a distance of above half a mile. The course and width of the vein, wherever exposed, appear uniform. (*From Dr. Shepard's Geological Survey of Connecticut*).—S.]

333 **Tuckerman, E. G.**, *New York*—Proprietor.
Butterworth's patent combination lock.

334 **Browne & Lambert**, *New York*—Proprietors.
Two of Whitmarsh's patent portable extension beds.

335 **Bartholomew, F. H.**, *New York*—Inventor.
Hydrant safety-valve.

336 **Ryle, John**, *Patterson, New Jersey.*
Floss, and sewing-silk.

337 **Chatain, Henry**, *New York.*
Patent machine mouldings.

338 **Eastman, William P.**, *Newark, New Jersey.*
Knitting machine, &c.

339 **Sibell & Mott**, *New York*—Manufacturers.
Bank and account books.
One set as used in the City Bank, New York.

340 **Haskell, Merrick, & Buel**, *New York*—Manufacturers.
Samples of powdered drugs.

341 **Oliver, T.**, *New York*—Inventor.
Tailor's transfer and patterns.

342 **Hotchkiss, William**, *Lewiston, New York.*
Sample of Soule's winter wheat.

343 **Hillyer, Virgin**, *New York.*
Samples of wheat flour.

344 **Adirondac Manufacturing Company**, *Jersey City, New York*—Manufacturer.
Specimens of iron and steel.
Pigs of decarbonized metal.
Bars of iron, and 500 lbs. of assorted cast steel.

The iron-works are located in the town of Newcomb, Essex County, N. Y., at the sources of the Hudson river; about forty miles, by the road, westward from Crown Point, on Lake Champlain, from whence transportation is had by water, or by water and railroad, to all the principal markets in the country. For ten of these forty miles —that is from the Adirondac village and the iron-works, to Tahawus, or lower works, as they are called—there is slack water navigation, by which transportation can be conducted very cheaply, by means of steam tow-boats, leaving only about thirty miles of land carriage. In this region, for about five months in the year, the snow lies on the ground, and affords facilities for the transportation of the iron to Lake Champlain, and of commodities from that lake to the works, which are of great advantage. Another, and it is supposed a cheaper mode of transportation, will soon be had by means of a line of plank roads, extending from Fort Edward, through the town of Minerva to Tahawus; and, at no distant day, cheaper still, by continuous railroads.

One of the most extraordinary features of this property, is the immense and incredible quantity of the iron ore which it contains, it being literally in mountain masses, and is quarried like granite rock. It is very rich, yielding about 70 per cent. of iron.

The water-power is on the same scale of magnitude with the ore, and is never-failing. The provision for fuel is ample, consisting of about 96,000 acres of land, heavily timbered, all of which, with the exception of 16,800 acres, is in nearly a compact body, surrounding the ore deposits.

The improvements consists of a large, new, and admirably-located smelting furnace, built in the most substantial and approved manner, with all the modern improvements—besides the old furnace, a forge, cupola furnace, saw-mill, and a mill for pounding the ore—three large charring ovens, five coal-houses, storehouse, shops, a large boarding-house, about twenty-five dwelling-houses, schoolhouse, barns, stables, wharves, boats, &c., &c. There are about 500 acres of land cleared, and under cultivation.

At Tahawus, or lower works, a dam of 700 feet in length has been constructed, in the most substantial manner, giving a head of 16 feet, forming a water-power of peculiar efficiency. Here there is a saw-mill, storehouses, lime-kilns, a spacious house, besides sites for other iron or other works, with a water-power almost unlimited in extent, and never failing.

The works for converting the iron into cast steel, are, for the present, located at Jersey city, N. J. This location was deemed advisable, principally in consideration of the greater cheapness with which anthracite coal can be had there, than at the iron-works—that being the fuel found to be best adapted for the purpose. They are advantageously situated on the New York Bay, and occupy a square of ground of 175 feet by 200 feet.

Another important feature in the advantages of this property, is the peculiar and valuable qualities of the iron properties produced from the ore. The adaptation of the bar iron, for making cast steel, is ascertained to be equal to any, not excepting the celebrated brand of Swedish iron, which is monopolized by the English steel manufacturers for that purpose. Cast steel, of a quality decidedly superior to any other now in use, and better than that made from the bar iron, made from the same metal, can, it is stated, be produced from the pig metal direct, by a simple process, costing only a small amount per ton more to bring it into the state of "*blister steel*," than it costs to bring bar iron into that state.

This is the first successful attempt at the manufacture of the important article of cast steel in the United States. It may be mentioned that there are one or two establishments in the country where *scrap steel* is remelted, and thus reproduced.

Extracts from a report of Professor Emmons, on this ore:—

"In order to obtain a correct conception of the amount of ore on the Sanford hill, we may estimate its solid contents; or if we merely estimate the amount of ore at the depth of two feet from the surface, we shall find that it amounts to at least 6,832,734 tons, a large portion of which may be removed or raised without the use of powder.

"In all the uncertainty which lies over this subject, I am more disposed to believe that the whole valley of the Adirondac river is underlaid by the magnetic oxide.

"At Adirondac, there is no limit to the amount and quantity of raw material; and that this is of such quality, as few, if any locations in this country can boast of affording. There is too a good supply of wood. These circumstances, taken in connexion with a full supply of water-power, render this location one pre-eminent for an establishment of the largest kind.

"These masses, veins or beds, are situated in the town of Newcomb, near the head waters of the Hudson river, in the extreme westerly part of the county of Essex. They are a few miles west of the centre of the great wilderness of New York, in which the group of mountains called the Adirondacs are situated."

345 Sperry, Henry, *New York*.
Clock.

347 Palmer, Wm. R., *New York*.
Specimens of two rifles.

348 Wadsworth & Sheldon, *New York*.
Specimens of mess beef, of first quality.

349 Monahan & Beers, *New York*.
One box of tobacco.

350 Barlow, E., *New York*.
Articles for dentistry. The difficult process of soldering the teeth to the plate by pure gold solder, is successfully effected in these specimens. No foreign substance enters into the sets of teeth exhibited, and they are free from all possibility of corrosion, and from other objections.

351 Batty, Thomas, *New York*—Inventor.
Improved serving mallets.

[The serving mallet is an implement used by riggers in winding tarred yarns around large ropes, to protect them from injury by water. This process is called "serving," and has hitherto been performed with a rude wooden implement, between which and the serving yarn there occurs an amount of friction which greatly adds to the labour of the operation. The mallet is soon destroyed by this friction.

The implement here exhibited is made entirely of metal (brass), and is provided with steel friction rollers, over which the yarn plays freely. The exhibitor is a practical rigger, and invented the implement for his own use. A specimen of the work done by it is also exhibited. It has been introduced into the American navy.—S.]

352 Fox & Polhemus, *New York*—Manufacturers.
A bolt of cotton duck.

353 Baron, Bros, *New York*.
Fire ladder, escapes, &c.

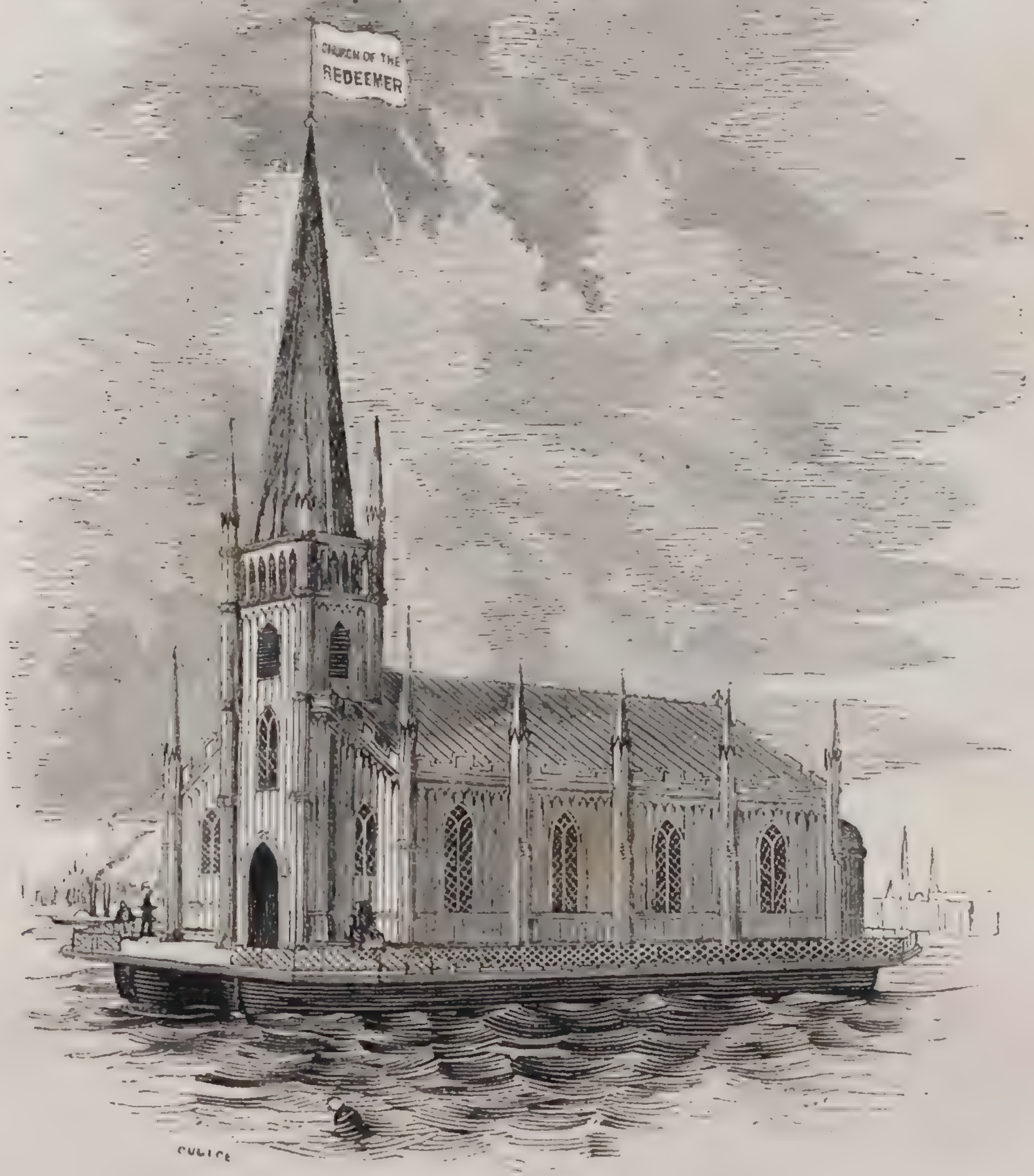
354 Winship, A. H., *Choctaw Nation, Arkansas*.
A book-mark, made by a little Choctaw girl.

355 Asher, A., *New Orleans, Louisiana*—Manufacturer.
Machine for manufacturing ice.

[Sir J. Leslie long since invented an apparatus by which ice could be manufactured. This consisted of a chamber in which the water to be frozen was placed, surrounded by sulphuric acid. The chamber was then exhausted of air, and the rapid evaporation of the water, aided by its absorption by the acid, abstracted so large a measure of heat from it as to freeze it in a few minutes. It was proposed to supply London with these machines; but they do not appear to have been generally employed. The same experiment is constantly repeated in the laboratory on a small scale.—R. E.]

356 Dennington, Clement L., *New York*—Architect and Builder.
Model of the floating church for seamen at the Port of Philadelphia.

This neat edifice, of which the engraving next page is a correct representation, now floats on the waters of the



Dennington's Floating Church for Seamen at Philadelphia.

Delaware. It was built for the Churchman's Missionary Association of Philadelphia. The superstructure is firmly fastened on two of the New York clipper-ships, with a promenade all round the outside: the boats are about 90 tons each. The exterior is painted to represent brown stone, and the style throughout is Gothic: the tower and spire are at the west end, and are suitable features in the structure. There is a flagstaff on the spire, with the Bethel flag flying. The interior is painted in fresco to resemble stone, with a groined Gothic ceiling, supported by cornice and pillars of the same style. The side windows are of stained glass, which greatly heighten the effect. There is a large stained-glass window at the east end, with different devices; below this are tablets containing the Lord's Prayer, Ten Commandments, and Creed. On either side of the chancel is a bishop's and priest's chair, all of black walnut.

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357 **Richards, B. W.**, *Philadelphia.*

Specimens of plumbago.

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358 **Clingman, T. L.**, *Ashville, North Carolina.*

Specimen of plumbago.

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359 **Olmsted, Mrs. John**, *Hartford, Connecticut.*

American forest autumn leaves, in their natural colours.

360 **Cowperthwaite, Thomas, & Co.**, *Philadelphia.*

Mitchell's Universal Atlas, Map of the World, Map of the United States.

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361 **Watson, G. W.**, *Philadelphia*—Maker.

A vehicle called the "Gazelle," because of its lightness and speed. It is a species of buggy, but is peculiar in its pattern and construction, and in the complete novelty of its general arrangements.

The vehicle is composed entirely of materials of American growth and manufacture: the plans, designs, devices, dies, &c., were all prepared by native artists.

The body is of a new design, and is built exclusively of polished American woods,—being walnut and hickory. The choicest specimens of these woods have been selected.

The carriage part, embracing the wheels, axle-beds, shafts, &c., are all of white hickory, and devoid of paint. Connected with the carriage part are many novelties. A prominent feature are the springs. These were invented purposely for this vehicle. Their advantages over others are their great strength, lightness, and elasticity, and they are, therefore, deemed an essential improvement. The springs are termed the "endless elliptical spring."

Another novelty of the carriage part, is an open or exposed perch-bolt, of great security and durability, as well as excellence of adaptation and elegance of finish. Both the head and the nut end of the shaft box-bolt, represent the acorn. The D wheel is of the same character.

The running gears present a display of carving. The head-block and tenon of the perch form the American eagle, with pinions extended, and in full flight. The wagon is supplied with a patent screw axle.

The shafts are finished with chased silver tips, and have stitched leathers. The steps are decorated with the olive leaf, indicative of peace. The top joints are heavily plated with silver, the prop nuts of which are embossed, on one side of the top, with the British lion, and on the other, with the American eagle, in heavy silver. The centre or rivet of the joints represent the English rose, in chased silver. The joint props are covered with heavy silver rollers.

The rims of the hub-bands represent a wreath in silver, composed of the rose, shamrock and thistle, in the centre of which is engraved the name of the maker of the vehicle.

The top, &c., is of patent leather, ornamentally stitched. The knob holes of the curtains form, in stitching, the grape leaf. The bows are neatly covered with patent leather, ornamented with embossing or creasing, in imitation of the olive branch.

The front and side valens of the top are of patent leather, stitched with scroll-work, and hands clasped in fellowship, emblematic of the happy fraternity existing between England and the United States. The curtain knobs represent the English rose. The glass frame in the back curtain is composed, in elegantly embossed silver work, of the lion's head, American eagle, rose, shamrock, and thistle.

The lining is of American cloth, of a dark-green colour. The lace was designed by W. H. Hortsmann and Son, Philadelphia. The ground is gold, with a mixed figure, worked in green and black silk, representing the oak leaf and twig, and olive branch, entwined in a wreath. Enclosed in each wreath is one of four emblems, viz :—American eagle, rose, shamrock, and thistle. The tufts of the cushions are of green silk, with gold centre. The festoons or inner curtains are of fringed silk netting. The loops, or cord and tassels, are of green silk and gold.

The dasher is covered with patent leather, adorned with neat stitching. On the front of the dasher are the heads of two British lions and two American eagles, with silver rings suspended from the mouths, to which are attached the dasher straps, beautifully stitched, with an appropriate contrivance as a substitute for the ordinary hook and ring, by which the straps are fastened and unfastened, with great facility. Welded with the heel of the dasher is a handsomely polished foot rod, an entirely new adaptation.

The vehicle is arranged and constructed with an extra back. The top and extra back both can be removed at will. (See engraving below.)

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362 M'Alister & Tannehill, *Louisville, Kentucky*—Manufacturers.

Samples of mustard.

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363 Duffield, Charles, *Louisville*—Manufacturer.

Smoked hams in canvas.

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364 Hill, John, *New York*—Manufacturer.

A travelling trunk.

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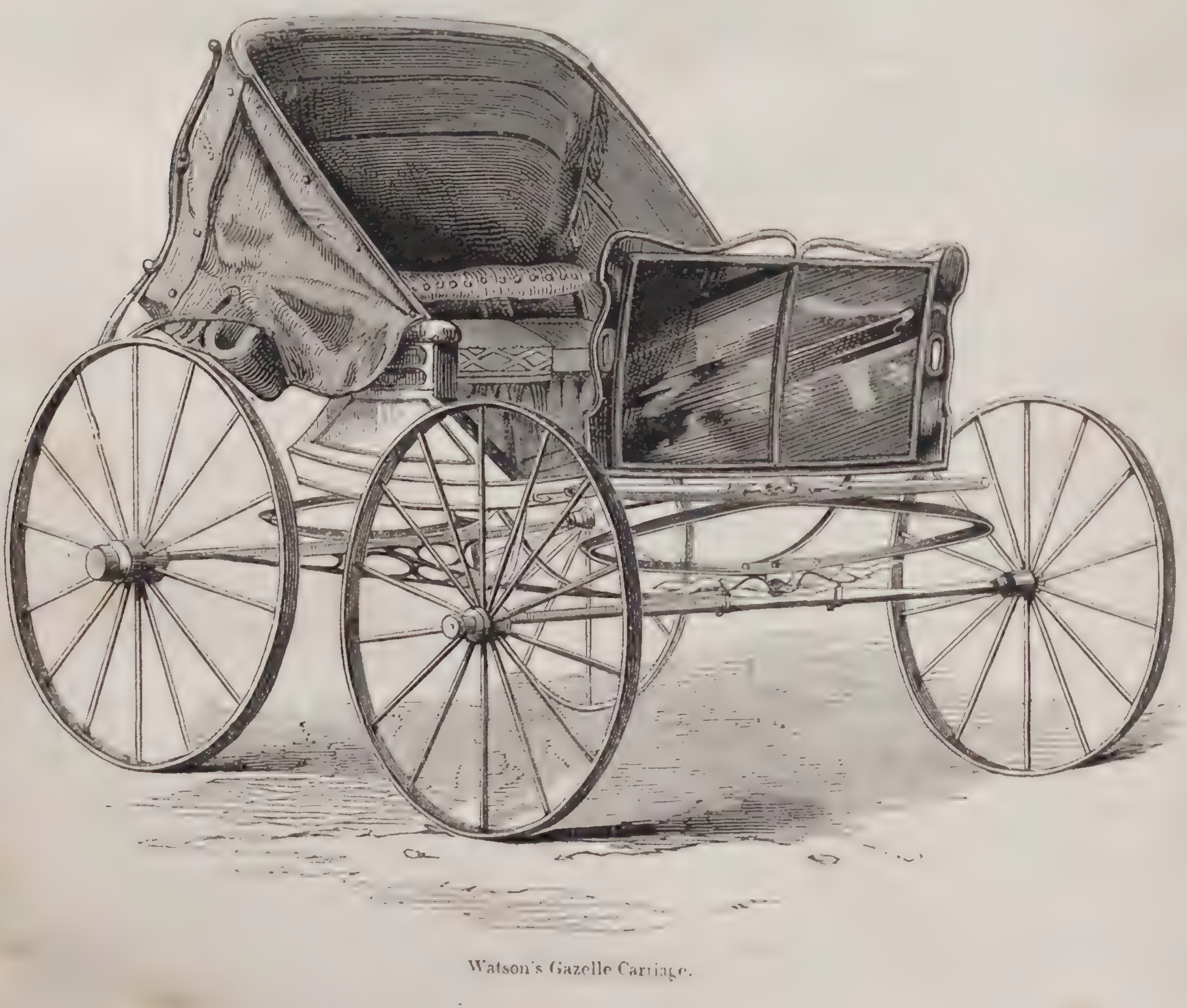
365 McWeeney, Michael, *New York*—Designer.

Portable parlour green-house.



Watson's Gazelle Carriage.

366 **Lord, Lynch, & Co.**, *New York*—Proprietors.
Soap.

367 **Stanton, David**, *New York*.

Specimens of penmanship, illustrating the portrait and character of Washington; written by a young pupil in the Free Academy, in the City of New York.

368 **Macy, Stanton, & Co.**, *New York*.
Woollen cassimeres.

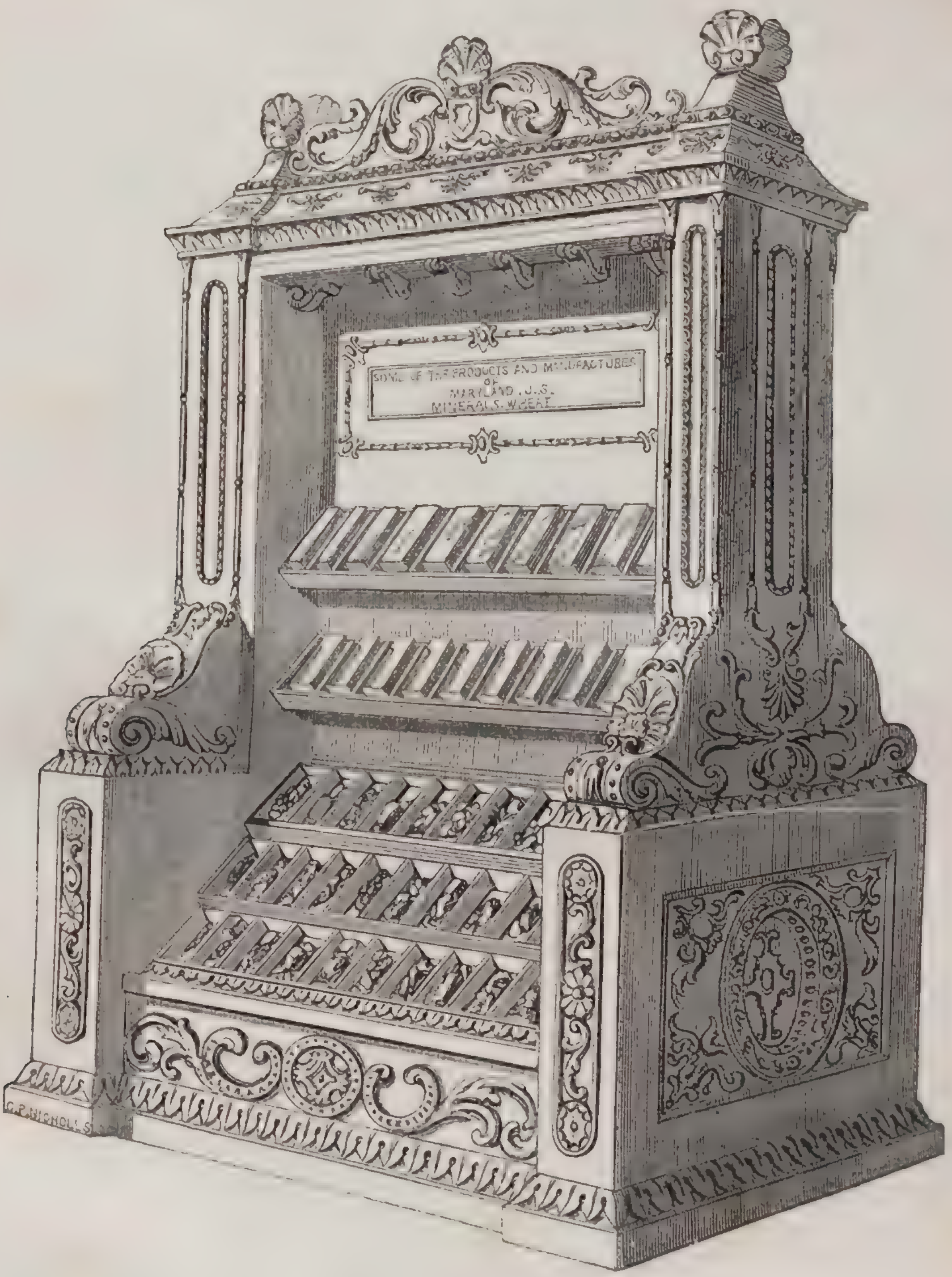
369 **Whitlock, B. M.**, *New York*.
Sample of Henry County tobacco.

370 **Baron Brothers**, *New York*.
Application of a blast to a furnace.

371 **State of Maryland**, *by its* **Committee**—Proprietors.

Cabinet made of Maryland woods, containing samples of the products of that State.

[This cabinet is an ornamental illustration of the natural history of the State from which it has been sent. The various products of that State are arranged and classified so as to render them available for study. The cabinet itself is represented in the following illustration.



Cabinet of Maryland Products.

372 **Fryer, Frederick**, *Baltimore, Maryland*—Inventor.
Ice-cream freezer.

373 **Roy, W. L.**, *New York*—Author.
Twelve Hebrew dictionaries.

374 **Nunns & Clark**, *New York*—Designers and Manufacturers.

Two pianos:—

A 7-octave rosewood pianoforte, carved. This piano is in shape a square—pianos of which description, though not at the present time much used on this side of the Atlantic, being greatly preferred in America. By a novel arrangement of the scale, and great improvements in the action, this piano will be found to possess much promptness and energy of action, and an equality of tone throughout the entire scale.

Pianoforte, having a Coleman's æolian attachment, with patent tunable reeds. In this instrument the process of tuning, but seldom necessary, is rendered more easy than in the piano itself, and so simple, that any can perform it.

The æolian attachment, forms a wind instrument of the softest and most delicate tone, and is so united to the pianoforte, that the same key-board controls both instruments, and either one of the two may be used, or both together blended in delightful and undistinguishable harmony. The fulness of tone, capacity of the swell and diminish, and the prolongation of sound so desirable in an accompaniment of the voice, which give to the organ its chief excellence, are attempted to be combined in this invention. It is not liable to get out of tune by transitions of atmosphere, and will remain in tune and in order in any climate.

375 Hanley, James, *New York*—Inventor.

Model "catcher" and model key.

[The "catcher" is an invention for throwing off obstructions from the rails of the permanent way of railroads.

The key is a contrivance to prevent doors from being unlocked from the outside by turning the key with pincers.]

376 Hitchcock, W. L., *New York*—Agent.

Grass and corn scythes, manufactured from Norway iron, and Saunderson & Co.'s cast steel, by the North Wayne Scythe Company, in the State of Maine.

377 Whitehurst, J. H., *Baltimore, Maryland.*

Daguerreotypes: Falls of Niagara.

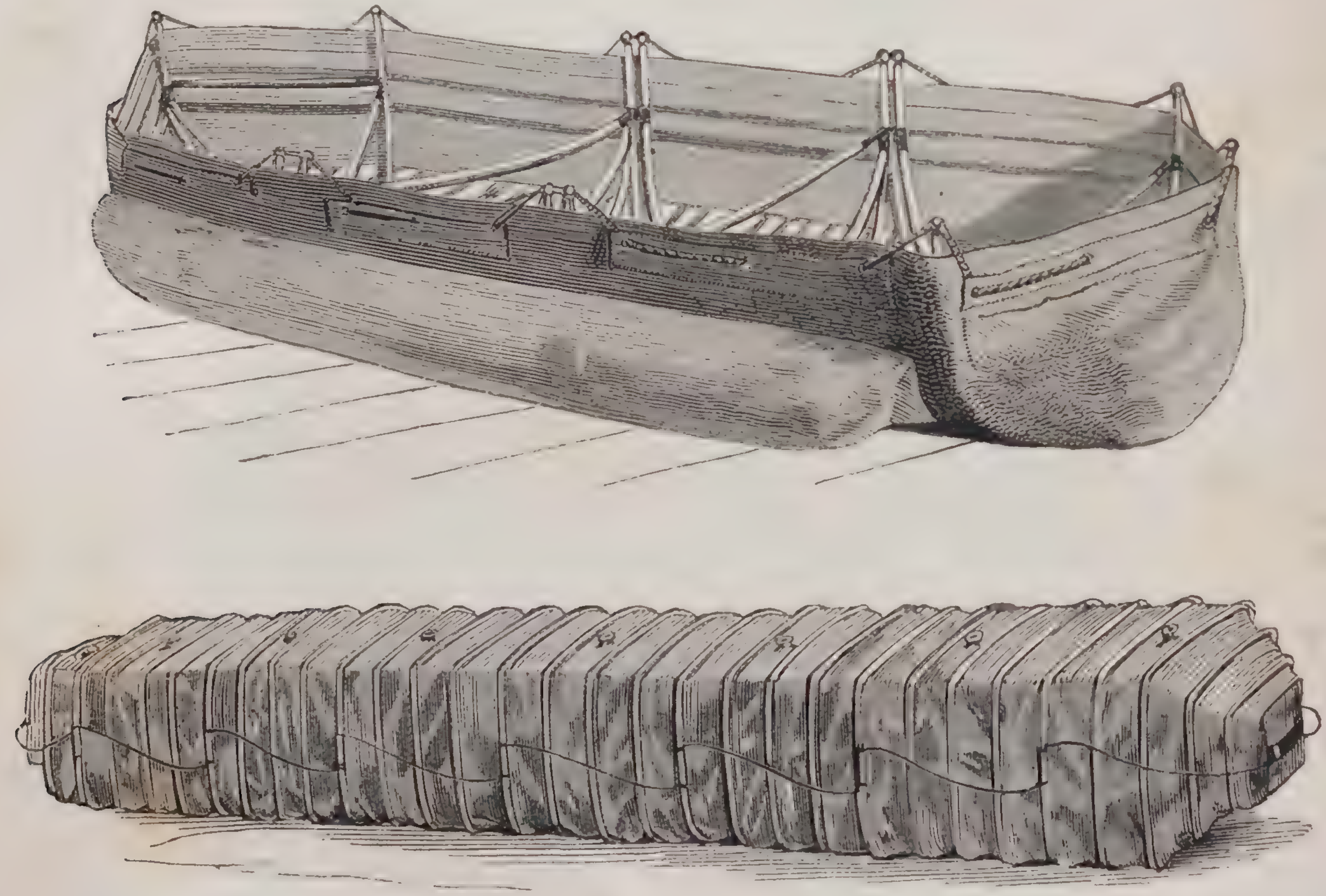
[These wonderful falls have been repeatedly represented by the daguerreotype. The cloud of spray rising from the bottom, and the white sheets of foam on the waters, contrasted with the trees and land, always exhibit a remarkable and interesting appearance in a daguerreotype. There is thought to be a difficulty in taking the image of falling water; but in practice this does not exist, as the form is always similar. The water of the falls in question appears as a white cloud.—R. E.]

378 Goodyear, Charles, *New Haven, Connecticut*—Inventor and Manufacturer.

India-rubber goods.

[Among these articles are several specimens of India-rubber life-boats, pontoons, &c. These boats are constructed so as to be extremely buoyant by having several chambers of air running along their length. The material of which they are formed precludes the probability of injury from concussion. They are also so contrived as to be extremely portable and to be readily transported from place to place. The accompanying illustrations represent the boats.

Some new applications of caoutchouc are also shown as to the handles of knives, veneers, and musical instruments, and new water-proof fabrics.]



Goodyear's India-rubber Life-boat and Pontoon.

379 Usher, R, *Louisville, Kentucky.*

Plates, and briskets of beef.

380 Brady, W. M., *New York*—Author.

Two volumes, "Kedge Anchor," a work on practical seamanship, with illustrations.

381 Jacot & Courvoisier, *New York*—Makers.

Gold "magic" hunting lever watch: the movement was imported from London, and the case was made in New York.

[The outer case is so constructed that the watch can be converted at pleasure into a hunting or open-faced watch. The case is exhibited for design and workmanship.]

382 Church & Chittenden, *New York*—Manufacturers.
India-rubber shoes.

383 Tuph, John, *New York*—Manufacturer.
Cane chairs.

384 Maxwell, Miss, *New Jersey*.
Autumn leaves.

385 Haight, Mrs. E., *New York*—Maker.
Fine embroidered shirt.
Fine stitched shirt.

386 Hayden, Whiting, *Willimantic, Connecticut*—Inventor.
Drawing frame for cotton, with an improvement for regulating the weight of the strand, called a drawing regulator.

[The drawing regulator is an appendage to the drawing frame, by means of which a more uniform "number" of work is produced by the "evening," or regulating the size of the "sliver" passing through the frame. The *weight* of the "sliver" itself is made to regulate the speed of the machinery by a few simple mechanical devices. The inventor is a practical cotton-spinner, and claims that the work produced by this machine is so uniform as to supersede entirely the necessity for weighing the "laps."—S.]

387 Newton, Isaac, *Philadelphia*—Producer.
Sample of Indian corn.

388 Wilder, A. A., *Detroit, Michigan*.
Revolving cylinder engine, and leeway indicator.
Fog whistle for lighthouse stations. The fog whistle is attached to the revolving cylinder.

389 Ludlam, H., *New York*.
Sample of tobacco, from Geo. T. Williams, Lynchburgh, Virginia.

390 Phalon, Edward, *New York*—Manufacturer.
Hair work, ventilating wigs, and toupee.

391 Bachman, John, *New York*—Artist.
Views of New York and Brooklyn.

392 Stephens, Henry, *New York*—Manufacturer.
Two jars of preserved peaches.

393 Stewart & Co., J. J., *New York*.
Sample of tobacco from D. H. London, Richmond, Virginia.

394 Tobit, John H., *New York*.
Combination type.

[Logotypes, or types for words, have often been suggested and attempted, but have never found general favour among practical printers. The present exhibitor, however, is a practical printer, and employs these types in his own office, and states that for rapid composition they are unequalled.]

395 Bache, Professor A. D., *Washington*.
Standard weights, measures, and balances.

[These are the official standard weights and measures of the United States' Government. Their preparation was commenced under the late Dr. Hassler, for many years the Superintendent of the United States Coast Survey. Their manufacture is now continued under the direction of the exhibitor, Professor A. D. Bache, LL.D., the present head of the Coast Survey.]

396 Wood & Tomlinson, *New York*—Manufacturers.
A sporting waggon.

397 White, Maunsell, *New Orleans*.
Specimens of sugar, pepper, and hemp.

398 Rallings, Mrs. W., *New York*—Maker.
Millinery.

399 Hobart & Robins, *Boston*.
Types, printing, and binding.

400 Reed, Chadwick, & Dexter, *Boston*.
Specimens of printing cloths.

401 Baker, William R., *Lowell, Massachusetts*.
Liquid and paste shoe blacking.

402 Newman, H. J., *Andover, Massachusetts*.
Imitation of wood.

403 Upham, Appleton, & Co., *Boston*.
Ginghams, cassimeres, &c.

404 Sayle, Merriam, & Brewer, *Boston*.
Samples of cotton cloths.

405 Gray, T., & Co., *Boston, Massachusetts*.
Specimen of glass-makers' sand. Found in Berkshire, Massachusetts. This sand is claimed to be the best for glass-making, which is known. The cost of transportation alone prevents its general use. As compared with sand from the Isle of Wight, it is said to have a superiority of 60 per cent.; and as compared with the best sand imported from Australia, a superiority of 20 per cent.

408 Ward, William & J. W., *Boston, Massachusetts*.
Specimens of copper ore.

410 Fogg & Burbank, *Boston*.
Pegged boots and shoes.

411 Breed, N. A., & Co., *Lynn, Massachusetts*.
Children's shoes.

412 Shattuck, William G., *Boston, Massachusetts*.
School desks and chairs.

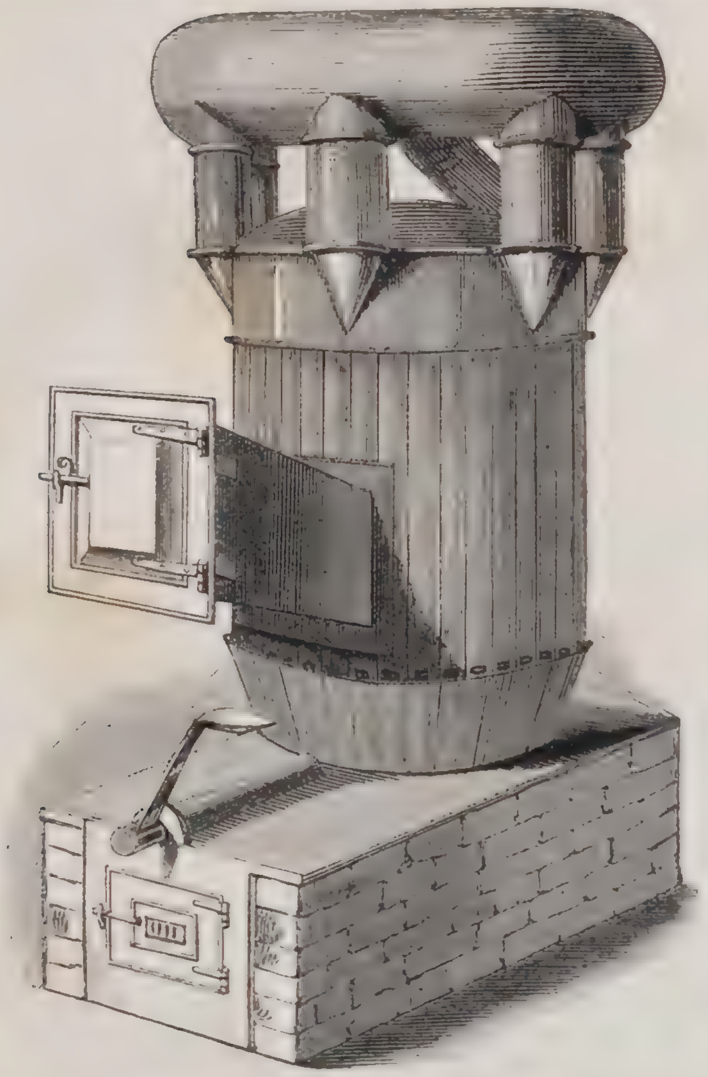
413 Prouty & Mears, *Boston, Massachusetts*.
Specimens of ploughs.

414 Pond, Moses, & Co., *Boston*.
Cooking ranges.

415 Bliss, R., & Co., *Pawtucket, Massachusetts*.
Hand-screws and other tools.

416 Ruggles, George H., *Boston, Massachusetts*.
Specimens of mica, or talc, for stove doors, &c.

417 Chilson, Richardson, & Co., *Boston, Massachusetts*.
Patent air-warming and ventilating furnaces and stoves. The construction of these furnaces differs in many respects from those ordinarily made. The economy of fuel is claimed to be considerable, compared with the amount of heat rendered available. One of these is represented in the following cut.



Chilson and Co.'s Air-warming Furnaces.

418 Doe, Hazelton, & Co., *Boston.*
Centre tables.

419 Browne, C. Allen, *Boston.*
Specimens of teeth forwarded by Dr. Morton.

420 Gassett, Henry, *Boston.*
Specimens of bookbinding.

421 Washburn, Ichabod, & Co., *Worcester, Massachusetts.*
Card wire.

422 Thayer, E. B., *Boston.*
Samples of shoe pegs.

423 Gates, William, *East Lee, Massachusetts.*
Hay and manure forks, and hoes.

424 Loring, George, *Concord, Massachusetts.*
Water pails.

425 Turner, T., *Weymouth, Massachusetts.*
Samples of edge blacking for boot and shoemakers.

426 Atwood, G. B. (for Phœnix Manufacturing Company), *Taunton, Massachusetts.*
Black-lead (plumbago) crucibles. This lead (plumbago) is pure.

[The use of plumbago for crucibles has been established by a prolonged experience, and this material is extensively employed for brassfounding, and for other purposes where intense heat is to be applied to a substance to be fused. Plumbago crucibles are, however, easily injured, and will not endure the fire beyond a certain number of times, ten or twelve. It is stated that the crucibles in question, are made of the pure material, and that they may be employed a much greater number of times than ordinary crucibles.—R. E.]

427 Everett, Addison, *Middlefield, Massachusetts.*
Various wooden bowls.

428 Lombard & Hall, *Boston.*
A grindstone.

429 Robinson, C., & Co., *Lynn, Massachusetts.*
Specimens of boots and shoes.

430 Sutton, J. A., *Boston, Massachusetts.*
Specimens of purchase blocks.

431 Warner, R., & Co., *Boston.*
Brooms, wooden ware, &c.

432 Gilbert, Anthony, *Boston.*
A gossamer wig.

433 Emerson, F., *Boston, Massachusetts.*
Ship ventilators.

[The ventilator exhibited is for the purpose of supplying the hold of a ship with a constant current of fresh air, and is intended as a substitute for the canvas funnel now employed, the mouth of which requires always to be directed toward the wind. The peculiarity of the ventilator exhibited is, that from whatever direction the current proceeds, the ventilator still directs it downward. This is effected in a very simple manner. A series of inverted cones is so arranged as to direct the air impinging on their surface, down the tube over which they are placed. An upward current is produced by directing the cones in the opposite way. The wind then acts as an assistant to the current of air within the tube, and facilitates its discharge through the top.—R. E.]

434 Pond, Moses, & Co., *Boston.*
Improved cooking ranges.

435 Gilbert & Co., *Boston.*
A variety of pianofortes.

436 Paige, J. W., & Co., *Boston, Massachusetts.*
Samples of merrimac prints and calico.

437 Paige, J. W., & Co., *Boston, Massachusetts.*
Samples of brown cotton drillings.

438 Hews, G., *Boston, Massachusetts.*
Pianofortes.

439 Howe, S. G., *Boston.*
Specimens of books for the blind.

440 Bates, Hyde, & Co., *Bridgewater, Connecticut.*
Cotton-gin.

[The original machine for ginning cotton—that is, for separating the fibre from the seeds—was invented by an American, named Whitney. By the use of that machine, an immense benefit was derived by the planters of the United States, since it entirely substituted mechanical for manual labour, in the preparation of the raw material, and thus rendered the growth of the latter a profitable undertaking on the most extended scale. The principal obstacle to the extension of cotton-planting had previously long been the difficulty and expense of ginning cotton by manual labour.—R. E.]

441 Johnson, Sewall, & Co., *Boston, Massachusetts.*
A variety of flannels.

442 Gemünder, Geo., *Boston.*
Violins.

443 Woodbury, J. P., *Boston, Massachusetts*—Inventor.
Stationary cutter, wood planing, tonguing, and grooving machine.

The cutters in this machine are similar to those used in a common hard plane; and are firmly screwed to their beds, which extend across the machine, where they are each adjusted and held by set screws. In front of each cutter is placed a yielding bar, as near to the cutting edge of the knife as possible, which serves to hold the grain of the wood together, just at the cutting edge, wholly preventing the splitting or tearing of the wood. It adapts itself to all inequalities of the board or plank, without clogging, thereby producing a perfect surface. The frame that holds the cutters, stocks, and mouth-pieces, in their proper places, is raised or lowered to suit the different thickness of the material. This machine does the work with great rapidity, passing over knots, shaky or cross-grained timber, in the most perfect manner, and is capable of planing boards 24 inches wide, at the rate of 90 feet in length per minute.

444 Miles, G. Z., *Richmond, Virginia.*
Ladies' and gentlemen's saddles.

445 Maynard & Noyes, *Boston, Massachusetts*—Manufacturers.
Writing and copying inks.

446 Pook, S. M., *Charlestown, Massachusetts.*
Model of a clipper ship, frigate, &c.

447 Lowell Machine Shop, *Lowell, Massachusetts.*
Power-loom lathe, dresser, brush, &c.

448 Sowrel, Antoine, *Woburn.*
Specimens of lithographic drawings.

449 Darton, William, *Boston.*
Model of clipper ship.

450 Skinner, F., & Co., *Boston.*
Specimen of cassimere.

451 Whipple, John A., *Boston.*
Daguerreotypes.

[Among these daguerreotypes is a remarkable one of the moon's surface. In this picture, which must have been taken by a large equatorial, the peculiar characters of the moon's surface are beautifully displayed. At the recent meeting of the British Association for the Advancement of Science, Mr. Bond, an American astronomer, exhibited daguerreotypes of the moon, taken with the 23-feet equatorial of Cambridge (U. S.) Observatory. These daguerreotypes were very beautiful, and admitted of being very considerably magnified. But Mr. Bond stated that the motion of the equatorial, although very steady, was yet not sufficiently so to admit of their being examined by very high magnifying powers. Sir David Brewster stated that, if these daguerreotype impressions were taken on transparent sheets of gelatine paper, and so placed before a telescope as to subtend accurately thirty minutes of a degree, they would assume all the appearance of the moon itself.—R. E.]

452 Cummings, J. A., *Boston.*
Tooth-wash and dentifrice.

453 Lawrence, A. & A., & Co., *Boston.*
Manufactures.

454 Almy, Patterson, & Co., *Boston, Massachusetts.*
Samples of cottons.

455 Field, Albert, *Taunton, Massachusetts.*
Iron and copper tacks and nails.

456 Earle, T. K., & Co., *Boston, Massachusetts.*
Machine cards for carding cotton, &c.

458 Chickering, J., *Boston, Massachusetts*—Maker.
Pianofortes.

459 Hooper, Henry N., & Co., *Boston, Massachusetts*—Manufacturers.
Epergnes, in or-molu and castings.

460 Morey, Charles, *Boston, Massachusetts.*
Machine for dressing, shaping, and ornamenting stone, for architectural and other purposes.

Its novelty consists in the material of which the cutters are composed, their peculiar formation and durability; the trifling expense at which they can be maintained, and great facility and economy with which, by appropriate machinery, they reduce the surface of stone.

Its value consists in its efficiency, economy, and superiority of execution over manual labour, thus greatly reducing the price, and increasing the demand for this durable building material.

It is an invention of Robert Eastman, Esq., of Concord, State of New Hampshire, United States.

461 Stimpson, G., jun., *Boston.*
Specimens of gold pens.

462 Adams, William, & Co., *Boston.*
Combination bank lock.

463 Bond, William, & Son, *Boston, Massachusetts.*
Electric clock, battery, &c.

464 Lawrence, Stone, & Co., *Boston*—Manufacturers.
Shawls and cassimeres.

465 Bacon, S. F., *Boston, Massachusetts.*
Folding, pressing, and sewing machine.

466 Riddle, Edward, *Boston, Massachusetts.*
Specimens of an American coach, Prince Albert waggon, York waggon, and slide-top buggy. Each of these vehicles presents a combination of great strength with extraordinary lightness. The axles, of Robert Pomeroy's manufacture, are a new invention. In shape, colour, finish,—in excellence of material and thoroughness of workmanship,—they are exhibited as a sample of New England manufacture.

467 Stephenson, Peter, *Boston, Massachusetts*—Sculptor.
Statuary: the wounded Indian.

468 Gibson, William, *New York.*
Specimens of stained glass.

469 Feutchwanger, Dr. Lewis, *New York*—Proprietor.
A collection of gems, minerals, fresh-water shells, Indian relics, petrifactions, &c., solely American productions, consisting of many thousand rare and valuable specimens, several of which have been heretofore unknown.

A mass of native copper, weighing 2,544 lbs., from the North West Mine, Lake Superior.

A collection of crystalline arboreal native copper, from Isle Royal, Lake Superior.

A cabinet of crystalline gems, native diamonds, gold and copper.

Two cabinets of small minerals.

A valuable collection of trilobites, mastodon teeth, blue limestone, and cretaceous fossils, from Alabama.

An assortment of anthracitic, bituminous, and cannel coals.

A magnificent collection of fresh-water shells, from the southern and western rivers.

A collection of Indian relics, from the ancient mounds on the Mississippi River.

An assortment of gigantic specimens of cinnabar, lead, zinc, iron, beryl, quartz, crystals, and geodes, stalactites, slate impressions, &c.

An assortment of polished marbles, soapstone, and the ores of iron, copper, zinc, lead, chrome, manganese, tungsten, &c., from different localities.

An assortment of mineral substances used in the arts, including felspar and oxide of titanium, for mineral teeth, oxides of tungsten, cobalt, and zinc, white-sand, and oil-stone.

A collection of all the new minerals recently discovered in the United States.

470 Upfield, William, *Lancaster.*

Boot-trees and patterns.

471 Addington, William H., *Norfolk.*

Patent bellows-leather boots.

472 Perkins, S. M., *Athens, Pennsylvania.*

Felt gloves and mittens.

473 Bradley, B., & Co., *Boston*—Manufacturers.

Specimens of bookbinding in a case.

474 Evans, H., *New Bedford*—Manufacturer.

Sample of cordage from Manilla hemp.

[Manilla hemp is not derived from the flax plant *Linum usitatissimum*, known in the other countries, but from a species of banana, *Musa textilis*. This tree is a native of tropical plains, and is most valuable for its general products. The fibrous material found in the bark is made into a cloth, and also into cordage. This flax-like substance is highly valued for textile purposes, and some of the finest muslins of the East are formed of it. Its use for cordage is also important, and the ropes made from it are whiter than those made from ordinary flax.—R. E.]

476 Adams, Henry, *New York.*

Portable saddle.

477 Bidwell, Rev. William H., *New York.*

Maps.

478 Patterson, *New Brunswick, N. J.*

Anthracite from Lehigh mountain.

479 Fitch, Dr. Samuel S., *New York*—Inventor.

Plated abdominal supporters.

481 Eisenbrant, C. H., *Baltimore, Maryland*—Maker.

Flutes, &c.

Printing machine for the blind.

482 M'Adams, J. & W., *Boston.*

Medium ledger, five quires, full bound, in Russia leather, with gilt sides and gilt edges, made of Carson brown paper.

Medium journal, five quires, in similar paper and binding.

Specimen-book of paper-ruling, full bound, in Turkey morocco, with gilt edges.

483 Dunlop, William A., *New Orleans, Louisiana.*

Specimens of penmanship.

484 Reed, I., & Son, *Philadelphia, Pennsylvania*—Makers.

Specimens of gold pens.

485 Rodriguez, B., *New Orleans, Louisiana.*

Specimens of aerothermes, or hot-air ovens.

486 Howland, Charles, *New York.*

Improved bell telegraph.

487 Borgnis, Miss M. A., *Boston, Massachusetts*—Maker.

Embroidery:—The raising of Jairus' daughter.

488 Searle, G., *Boston.*

A Sioux saddle and hunter's belt: wrought by an Indian maiden, 15 years' old, of the Sioux tribe. Her only patterns were the wild flowers which she selected daily from the woods.

489 Miles, Pliny, *New York.*

Gold and silver coins.

490 Fuller, John E., *Boston, Massachusetts.*

Mathematical telegraph and model calculator.

Computing telegraph. Pocket computer.

491 Mayall, John E., *Philadelphia.*

A variety of daguerreotypes.

[The Americans, from the first announcement of the wonderful art of sun-painting, have zealously made the subject one of much patient experiment. The first portraits from life were taken by the daguerreotype, in New York, and a variety of valuable manipulatory processes have originated in that country. The success with which the art is practised, and the degree of perfection to which it has been brought, may be estimated by the specimens exhibited by various artists. The brilliancy and sharpness of some of these are highly remarkable. Of late an American has announced the discovery of a method of obtaining coloured pictures from nature, the ordinary colours being communicated by a brush. The process is not, however, published. M. Becquerel, a French chemist, has partially succeeded in obtaining a coloured impression on plates; and, more recently still, photographs in natural colours have actually been exhibited in this country. These remarkable pictures are taken by a process discovered by a relative of M. Niepce, the originator of those principles which were brought to a successful accomplishment by Daguerre. The ordinary daguerreotype process only produces pictures with light and shade.—R. E.]

492 Kidder, Charles F., *Boston.*

Indian cap.

493 Dalphin, John Ezra, *Springfield, Otsego County, New York.*

Self-adjusting churn: to effect the purposes of churning and afterwards gathering the butter, and working it to expel the buttermilk. These objects are attained in this churn by the peculiar form of the revolving dasher, which, when in operation, agitates the cream by means of the slats, which are set at such angles as to force the cream toward the centre; it is there met by moveable floats, which, when revolving, stand open, and cause the cream to move outward; these various and contrary motions so agitate it that the butter is soon produced. In order to gather and work the butter, the dasher is reversed.

494 **Truesdale, Jacobs, & Co.**, *New York.*
Samples of cotton.

495 **Commeford & Redgate**, *New York*—Manufacturer.
Light cane chairs.

496 **Rodgers, H. S.**, *New York*—Proprietor.
Two velocipedes.

497 **Howe, David W.**, *New York*—Proprietor.
Dr. S. P. Townsend's extract of sarsaparilla. It is extracted from the root without heat, by a process said to be peculiar to the discoverer.

498 **Baker, J. B.**, *Boston*—Maker.
Specimens of harness.

499 **Jewett, S. W.**, *Middlebury, Vermont.*
Sample of Indian corn, twelve-rowed variety, yellow; and a sample of Vermont products.

500 **Kimber, A. M., & Co.**, *Philadelphia, Pennsylvania.*
Specimens of fine wool.

501 **M'Henry, James**, *Philadelphia.*
Specimen of soapstone.

[Soapstone is known to mineralogists by the term steatite. It is found in abundance in many parts of America. It is chemically a hydrated silicate of magnesia, with a little alumina and oxide of iron. Its peculiar greasy feel has been the origin of the name of soapstone. —R. E.]

502 **Herrick, J. K.**, *New York.*
An assortment of account books.

503 **Clawson, H. N.**, *Michigan.*
Excelsior soap.

504 **Pinkus, Henry**, 448 *West Strand*—Inventor.
Plans and models illustrating a variety of principles of locomotion invented by the exhibitor.

1st. The Pneumatic Canal Tramway, and for propulsion of vessels on canals and rivers, without action on water as the impelling medium. Invented in 1825. Comparative plan by steam propulsion 1846. Patented.

2nd. The Atmospheric Railway, invented in 1830, and as applied on the Dalkey, Croydon, South Devon, and Paris and Versailles Railway. Patented.

3rd. Comparative systems, invented in 1844, dispensing with the long valve. Patented.

4th. The Atmospheric Locomotive Railway, invented in 1834, and constructed in 1836, for the alternate or combined working of both the latter systems, exhibiting the varied methods invented in 1844, adapting a single line of tube to supply power on a double line of railway, with reservoir-main to husband power, avoid leakage, and dispensing with stationary steam. Engines and the use of air-pumps. Patented.

5th. Ocean propulsion, machinery and method of obtaining auxiliary propelling power, in sailing-ships, by the combined action of waves and the motion of the vessel. Patented.

6th. Exemplification of a new system of agriculture, showing the means of performing the mechanical operations of tillage, as ploughing, harrowing, drilling, dibbling, sowing, reaping, mowing, or, in lieu thereof, digging, pulverising and sifting the soil, trenching, laying drains, filling in and rolling, by stationary steam and auxiliary atmospheric power. Patented.

7th. The Electro-magnetic Railway Train Controller, for preventing collision of trains during fogs at night, or by day, lighting a railway, by intermitting electric lights, from stationary or moving batteries, and establishing telegraphic communication between trains, in rapid motion, or between guards and engine-drivers, and uniting stationary batteries with existing telegraphs. Patented.

8th. Exemplification of a new method of working mines and quarries.

Advantages.—By the first, second, third, and fourth of these inventions, are seen the advances in improvement. In the public use of the second, inconveniences arose from the material and construction of the long valve, which is neutralized in the third method, by dispensing with it, and the substitution of a flexible diaphragm of vulcanised India-rubber, the prevention of leakage and husbanding power results.

The fourth method being an atmospheric locomotive system, in which a single line of tube suffices for a double line of railway. The amount of power is independent of the diameter of the tube; no piston moves in a propelling tube. A train moves under the action, in motive force, of two fixed stations simultaneously; avoidance of much friction in a long rapid column of air results. Locomotive power is doubled on inclines without enlarging tube. Steam-engines, and the use of air-pumps, are avoided, and rarefaction is effected by a combination with condensing reservoir method; the movement of the train is forwards and backwards, as with steam locomotives. The former system is rendered as flexible, on long lines, as the latter. The cost of constructing and working a line of railway on the atmospheric locomotive system is only one-half that of the Croydon and South Devon practice; the speed is unlimited; and there is much greater safety than with the steam locomotive system.

The fifth invention is a practical method of gaining propulsion, in sailing ships on the ocean by rarefaction or compression of air, the latter used expansively in kelson reservoirs; pumping action by long levers, with buoyant floats at their ends, displacing two tons of water, and giving that pumping force at the end of each lever 35 feet from fulcrum: 80 horse-power obtainable, in a ship 600 tons burthen. The burthen of a ship, in oscillating motion, is the initial motive force. Rotatory engine and screw propeller, the better mode of arrangement. Cost, first construction, no maintenance, except wear and tear.

The sixth invention is a method, by fixed motive power, to effect tillage. Advantages—mechanical operations performed at one-third the ordinary cost. Spade labour by machinery. A more complete and careful tillage, inducing a larger production from any given area of field. Cheap facility in drainage. Cost for permanent works. Outlay for 30 years equal to from 3*l.* to 4*l.* per acre.

The seventh of these inventions is a method, by comparatively inexpensive means, of preventing the collision of railway trains, whether in fogs at night or by day, and establishing telegraphic communication between trains in rapid motion, and between guards and drivers. The batteries are stationary or moveable. Electric wires are laid in sections of three-quarters of a mile or more on insulated surfaces. The batteries being constantly in action, the electric circuit can only be completed when the electro-magnetic communicators of two locomotives get on to the same section of wires. The electric circuit is thus made complete. The electric force gives motion to a rotatory instrument, which sounds the steam whistle, shuts off the steam, and, by action on an escapement, gives gravity to the levers of breaks to stop the rear train, which can only move on again when the preceding train arrives on to another section of wires. The line of way may be so regulated as that a train shall not approach, during night or a fog, nearer than half or three-quarters of a mile, whilst the police of a line have the power of stopping a train on any section. This invention affords safety to life and property in railway transit.

The eighth of these inventions is a labour-saving process, intended to afford a larger and better yield, from a given amount of power.

505 Liebert, S., *Easton.*
Maps of Germany.

506 Sanderson, A., *Hatfield, Massachusetts.*
A carpet broom.

507 Hough, R. M., *Chicago, Michigan.*
Two tierces of beef.

508 Henry, S., *Charleston, South Carolina.*
Brooms, made of the stalks of the broom corn.

509 Shattuck, W. F., Agent for G. W. Eddy, & Co., *Waterford, New York*—Manufacturer.

G. W. Eddy's patent toughened metal railway wheel. This invention exhibits a new and improved mode of forming or casting a two disc-chilled metal railway wheel. One disc being corrugated, and the other made convex, meet the requirements of the metal in casting or founding. The box and rim are connected with the discs, without any danger of breaking or flying, from the contraction of the metal while cooling; by this method great strength is said to be produced.

510 St. John, John R., *Buffalo, New York*—Proprietor.
Cadwell, Payson, and Co.'s "excelsior" soap.

511 New York Iron Bridge Company, *New York.* (Rider, Emory, Manufacturer and Proprietor.)

A reduced model of Rider's improved suspension truss bridge.

A full-sized model of the same.

Patented in the United States and in Europe.

[This invention consists in the peculiar introduction and application of the longitudinal strength of iron, in such a manner as tends effectually to secure the durability, while it also presents a structure of greater economy than any other iron bridge of equal dimensions at present in use. This peculiar application of longitudinal tension of wrought iron in the construction of an iron bridge, and the cambering or arching by means of the wedges or keys, are entirely original.]

512 Harris, —, *Waterville, New York.*
Patent paint mills.

513 Parker, Wilder, & Co., *Boston.*
Specimens of blankets.

513a Burch, L. D., *New York.*
Air-tight cooking-stoves.

514 Holloway & Co., *London, England.*
A variety of clocks.

515 Augustus, E., *Boston, Massachusetts.*
Various chairs.

516 Lawrence, Col. T. B., *Boston, Massachusetts.*
Carving-knife and fork.

517 Lawrence, Col. T. B., *Boston, Massachusetts.*
Iron flooring.

518 Hitchcock, Dr. D. K., *Boston, Massachusetts.*
Mineral teeth.

519 Smith, J. M., & Co., *New York.*
One barrel of beef.

520 Sapling Brothers, *London, England.*
Six brooms.

521 Lawrence, Hon. A., *Boston, Massachusetts.*
A map.

522 Grant, J., *London, England*—Proprietor.

Statue of the Greek Slave, executed by Mr. H. Power.

This statue is by the American sculptor, Hiram Power, which was executed in Italy to the order of its proprietor, John Grant, Esq., who has kindly allowed it to be placed in this Exhibition at the request of the United States' Commissioner.

The figure embodies an historical fact; for during the early Greek revolutions it was customary to expose the prisoners or captives for sale in the Turkish bazaar, under the name of "slaves;" and the figure here represented is intended for that of a young and beautiful Greek girl, deprived of her clothing, and exposed for sale to some wealthy eastern barbarian, before whom she is supposed to stand, with an expression of scornful dejection mingled with shame and disgust. Her dress, which is the modern Greek costume, appears on the column, and the cross implies her religion and country. The chains on her wrists are not historical, but have been added as necessary accessories. It has been finely engraved by Thomson, and published by Her Britannic Majesty's Printsellers, the Messrs. Graves and Co., Pall Mall.

523 Eddy & Co., *Union Village, New York.*
Horse power.

524 Borden, G., *Galveston, Texas*—Inventor and Manufacturer.

Patent meat-biscuits.

The patent meat biscuit contains in a concentrated and portable form all the nutriment of meat combined with flour. It is easily preserved in all climates, and for a long period of time, without change or deterioration. It is not liable to heating or moulding, to which corn in grain or flour is extremely subject on long voyages; nor is it attacked at all by weevils or any other insect. In evidence of its value as an article of food, as tested by experience, it is used by the American army on service on the southern and south-western frontiers of the United States. The nature of this discovery or invention, consists of a new process of preserving animal food, by obtaining, in a concentrated form, all its nutritious portions, and by combining them with flour or vegetable meal, and by drying or baking the mixture in an oven, in the form of a biscuit or cracker. One pound of this preparation is said to contain the nutriment or essence of five pounds of good meat, or, in other words, all the nutriment (except the oily portions) contained in over 500 pounds of good fresh meat, with 70 pounds of flour, can by this invention, be packed in a 22-gallon cask. It can be prepared in soup, pudding, sauce, &c., in a few minutes.

The manufacture of the meat biscuit is located at Galveston, because the prairies of Texas abound in cattle of good quality, at so low a price as to justify its manufacture into this concentrated form of food, and thus save an immense expense in the transportation of useless bulk and weight of meat into countries where it is scarce and dear.

525 Whitehurst, J., *Washington.*
Daguerreotypes.

526 Pfaff, G., *Philadelphia, Pennsylvania.*
Flute.

527 Keremerle, M., *Philadelphia, Pennsylvania.*
Leaf-turner for music.

528 De Ford & Co., C. D., *Baltimore, Maryland.*
Tobacco.

529 Wethered & Brothers, *Baltimore, Maryland.*
Black doe skins.

530 Lee, J., & Co., *Boston, Massachusetts.*
Samples of linseed-oil cake.

531 Goddard, L., 6 *Crescent, America Sq., London.*
Two blades of whalebone from the mouth of the polar whale.

532 Perkins, A. M., *of London*—Inventor.
Hot-water apparatus; hot-water oven; blast furnaces; hot-water steam-boiler; steam-gun and case; iron right and left screw-joint.

[The high-pressure principle of heating was originally invented by this exhibitor. It is effected by the employment of wrought-iron tubes of small bore. The water in these tubes is made to circulate at a high degree of velocity, and never rises into steam, although its temperature may range far above that of 212 degrees, the ordinary boiling point of this fluid. This system of heating apartments has been adopted in some of our national institutions, as at the British Museum. The application of high-pressure steam to the purposes of projectiles, is also due to this inventor. The steam-gun exhibited, discharges with immense power and velocity, a large number of balls in a few seconds. The application of the heat of water, confined in the same wrought-iron tubes, to economical purposes, is more recent. By this means an oven may be thoroughly heated so as to bake and perform other culinary processes with great facility, it is attended also with economy.—R. E.]

533 Francis, J., *New York.*
Rowing-boat of Spanish cedar.

535 Ashmead & Hurburt, *Hartford, Connecticut.*
Machine-made gold foil, exhibited for its evenness of fibre, its toughness while under pressure of the instrument, and for its susceptibility of becoming solid when pressed home into the cavity. The machine is on exhibition in the English department (Class 5, No. 126). Also gold leaf, exhibited for its quality.

536 Willard, Mrs. E., *Troy, New York.*
Maps.

537 Goddard, L., 6 *Crescent, America Square, London.*

Two blades of whalebone from the mouth of the *balœna mysticetus*, or polar whale, through which the food is taken into the stomach, taken in the Arctic Seas, near Kamtschatka by the ship Envoy, Captain Walker, of New Bedford, Massachusetts.

A four-oared rowing boat, built of Spanish cedar, fastened with polished brass rivets, panelled inside with branch mahogany, bird's-eye maple, and ebony; the stern sheets strengthened with carvings of the rose, shamrock and thistle in mahogany, and also the outside of the stern. The rudder is of beautifully figured branch mahogany bound with brass, and the yoke has the Lion and Unicorn superbly carved upon it. Oars with the boat. Builder: Joseph Francis, New York, state barge builder to the Emperor of Brazil, the Grand Duke Alexander of Russia, &c.

538 Sholl, J., *Burlington.*
Beehive and bees.

539 Forrest, R., *New York.*
Shirts.

540 Andrews, H. Q., *New York.*
Sarsaparilla.

541 Perkins, A. M., *London, England*—Inventor.
An apparatus for circulating hot water at high temperatures, invented and patented by the exhibitor. The above apparatus is applicable to a great variety of purposes, amongst which are the following, viz.:—

1. Warming apparatus.—It has been extensively used in the Government works and in private buildings in England and in other countries. It may be limited to a low temperature by a due proportion of the heating surface which is in the fire to that which is out of the fire.
2. Hot-water oven.—This is a plan for heating ovens for baking bread and biscuits, for roasting coffee and other articles, where equal and high temperatures are required.
3. Blast-furnaces and forges.—This is a plan for transferring heat from the mouths of furnaces and backs of smiths' forges, for keeping down the temperature to prevent burning them, and also for making hollow fires.
4. Hot-water steam boiler.—This is a plan for generating steam, which may be done by this system under any degree of pressure, from 1 lb. to 500 lbs. to the square inch, with safety, as is exemplified in the discharge of balls from the steam gun.
5. The steam gun.—This is the invention of the late Jacob Perkins, who, in the year 1824, constructed a generator of such form and strength as allowed him to carry on his experiments with highly elastic steam without danger, although subjected to a pressure of 1,400 lbs. the square inch. This high pressure of 1,400 lbs. to the square inch required so high a degree of heat that the iron of which the generator was made soon became destroyed. It was therefore considered desirable to reduce the pressure to 500 lbs. to the square inch, which has been found sufficient to discharge balls with the force of gunpowder.

The hot-water apparatus is not in the least injured at that high temperature, and is therefore a suitable and safe means of applying heat and pressure.

6. As great strength of material is required for the construction of the hot-water apparatus, and as perfect joints are indispensable, a specimen of Whitehouse's patent wrought-iron tubing, as manufactured by Messrs. John Russell and Co., of Wednesbury, is submitted. This tubing will bear a pressure of 5,000 lbs. to the square inch, and is the only suitable material of which the apparatus should be constructed. The joint is the invention of the exhibitor, and it answers its purpose most effectually.
7. Cast-iron right and left screw-joint. This joint is applicable for water-pipes, hot or cold, and for gas-pipes, and will bear any pressure to which the cast-iron pipes may be subjected.

542 St. John, J. R., *Buffalo*—Inventor.
Velocimeter.

543 Dawson, George, *Albany, New York.*
New York papers.

544 Beach Brothers, *New York.*
Cheap newspapers.

[America has long been celebrated for the abundance and excessive cheapness of her newspapers. No organization of any extent is without its representative in the press. Of late it appears to have been attempted to increase the size of page of these already large sheets, and some specimens exhibited, greatly exceed the ordinary size of the page of English paper, and are produced at extremely low rates. Some extraordinary printing presses have recently been erected in the United States, which are employed in printing these papers.]

545 Delanoe, Capt. J. C., *New Bedford, Massachusetts.*
Cotton, with linen finish.

546 Updegraff, Dr. J., *Wheeling.*
Silk handkerchiefs.

548 Stephenson, Robert, *London*—Proprietor.
Statue of Fisher Boy, by Hiram Power.

549 Nicholson, A., *New York*.
Table-cover.

550 Fountain & Porter, *Cincinnati, Ohio*.
Daguerreotype of the city.

551 Blodget, S. C. *New York*.
Sewing machine.

552 Betjetman, H. J., *Cincinnati, Ohio*.
Patent bedstead.

553 Campbell, S., *New York*.
A lapping machine.

554 Houston, J. D., *Natural Bridge, Virginia*.
Fire and water-proof paint. The Virginia zinc-stone paint is an article of recent discovery. It has been found but in one locality thus far, and possesses properties much adapted to the purposes for which it is used. Its analysis shows carbonate of zinc 25 parts, carbonate of magnesia 11·21 parts, silica 28, alumina 17, &c. &c. It is found near the surface of the ground in a solid rock, which, when pulverized and mixed with oil, and applied to any surface, forms, after a short time, and just in proportion as the oil dries out, a hard, closely adhering and perfect stone coating, alike impervious to water and proof against fire. Its colour varies from a light drab to a dark brown. It does not crack from the influence of cold or heat, and admits of the finest polish.

Where a pure white colour is wanted it will not answer, but in every gradation of shades, from the light drab to total black, it accomplishes all that is necessary in paint. It hardens by time and the constant tread upon it; and where, as in our cities in the United States, the roofs of houses are used for the drying of clothes, does not affect it. Upon any surface where it is applied it becomes an impenetrable and incombustible substance.

555 Chickering, J., *Boston, Massachusetts*.
Plaster cast of Daniel Webster.

556 Whiting, C., *London, England*.
Specimens of bank-note printing.

557 Browning, William, *New York*.
Drawing of the engine of steamer "Pacific."

558 Evans, Dr., *Philadelphia*.
Samples of teeth filled with gold.

559 Miller, John E., *New York*.
New Orleans moss. This moss is of vegetable growth, adhering to the limbs of trees, and falling like a mantle around them. It is extensively used in the United States by carriage, furniture, and mattress manufacturers, for stuffing, being equal in elasticity to horse-hair, quite as durable, and costing less than one quarter its value.

560 New Brunswick India-rubber Company,
New Jersey—Manufacturer.
India-rubber shoes.

561 Davidson, J. D., *Virginia*.
Specimen of alum rock. Spar, Weir's Cave. Petrified moss.

562 Mears, Granville, *Boston, Massachusetts*.
Specimens of lard oil.

563 Davis, J. D., *Pittsburgh, Pennsylvania*.
Indian ornaments.

564 Moore, William, *Boston, Massachusetts*.
Specimens of soap.

565 Simpson, Professor, *Edinburgh, Scotland*.
A silver cup.

566 Dodge, N. S., *Pittsfield, Massachusetts*.
Voting telegraph, used for the purpose of saving time in taking the "yeas" and "nays" in legislative bodies.

567 Pratt, J., & Co., *Meriden, Connecticut*—Inventor.
Specimen of ivory veneer, cut by machinery.

[The machine by which these veneers were sawn is a recent invention of the exhibitors. One piece of this veneering is 12 inches wide and 40 feet long, sawn from a single tusk.—S.]

568 Mahan, F., *Philadelphia, Pennsylvania*.
A fashion plate.

569 McKensie, J., *Dubuque Jowa*.
A specimen of marble.

570 Adams, N., *New York*.
A brick-making machine. A wheel for kneading clay for bricks. This wheel is intended to substitute mechanical for manual labour.

571 Roddis, T. R., *Milwaukie*.
Candle-making machine.

In this machine, the new principle of setting the wick in the mould by the use of the candle previously drawn is exhibited. It is claimed that five times the amount of the manufactured article can be made with the same labour by this machine over that by the usual process.

572 Shearman, E. S., *New York*.
Specimens of lard oil.

573 Morey, C., *Boston*.
Sewing machine.
By a very simple process, straight and curvilinear seams are sewed in cotton, linen, or woollen cloth, with great rapidity, by this machine. With one attendant it will accomplish the work of five seamstresses. It is easily wrought, is not liable to get out of repair, and is readily applicable to almost every variety of the plain stitch. In the large ready-made clothing establishments in the United States it is universally used.

574 Furgerson, D., *Wisconsin*.
Specimens of flax.

575 Day, J., *Newark, New Jersey*.
Model spring-bed.

576 Knight, W. W., *Philadelphia*.
Janus locks.

577 Tricker, G., *Ohio*.
A collection of furs.

578 Roy, J., *West Troy*.
Shawls.

579 Whipple, J. E., *West Troy*.
Specimens of lard oil.

580 Morey, C., *Boston*.
A spike machine.
This machine is for the purpose of making wrought spikes, its usefulness being attested by its universal adoption in the United States. It makes a more perfect spike than can be manufactured under the hammer, and will accomplish 700 per cent. more work than by the usual hand process; that is, it will turn out 2,000 per day.

582 **Hyde, J. J.**, *New York.*
Axletree.

583 **Hendley, Robert**, 3 *Upper York Place, St. John's Wood, Regent's Park.*

The five known specimens of alpaca wool, from Green Briar, County Virginia, United States, the lambs being brought from Brazil.

584 **Ross, G.**, *New York.*
India-rubber shoes.

585 **Anthony, C. J.** *New York*—Inventor.
Breech loading gun.

586 **Leroy & Co.**, *New York*—Manufacturer.
Tin pipes.

[The tin pipes here exhibited are believed to be the first successful attempt to produce those pipes in continuous lengths by hydraulic pressure, and at a cost rendering their general adoption practicable. The objection to lead pipes as a conduit for water arises from the fact that they impart a cumulative poison to that fluid; but their cheapness has continued them in general use in spite of this well-known objection. The advantages claimed for them over lead are that they are stronger, lighter, less likely to get bruised or injured, are more readily worked, and are safe, sweet, and incorruptible conduits for fluids.—S.]

587 **Bateman, Mrs.**, *Ohio.*
Silver cup.

588 **Parish, Robt. A.**, jun., *Philadelphia.*
Perpetual writing pen.

589 **Wright, Charles J.**, *California.*
Gold comb.

590 **Ragan, Wm.**, *Philadelphia*—Manufacturer.
Reclining chair.

591 **Tyler, J. E.**, *Windham Court.*
Education tables.

592 **Beach, W.**, *New York.*
Books on botany.

593 **Oliver, F.**, *New York*—Inventor.
Apparatus for measuring.

594 **Prosser, Thomas**, *New York*—Inventor.
Model of machine for rolling tin.

595 **Prosser, Thomas, & Son**, *New York*—Manufacturers.

Horse power, consisting of three parts, viz., gear, shaft and pulley.

Tinman's machines, viz.:—stove pipe former; rotary shears; folding machine; grooving machine; wiring machine; setting down machine; turning machine; and burring machine.

Two molasses gates.

Sickle's ashes-shifter.

596 **Abbott, T. T.**, *Manchester, N. H.*
A speeder flier.

[This flier is said to be an improvement on those in common use. With the exception of the bottoms, it is made of cast steel. The advantages claimed are, that it is lighter by several ounces than the common fliers, that it does not expand by a sudden increase of speed, is not easily bent, and does not choak in damp weather. It is also durable and cheap. The invention has been in use three years. Several thousand are now running in Manchester N. H., some in Lowell, Massachusetts, and in various other places.—S.]

597 **Tyler, P. B.**, *New York.*
A railway switch. A water-gauge.

598 **Ringgold, Cadwalader.**

A series of charts, embracing the latest surveys of the Farallones, entrance to the Bay of San Francisco, Bays of San Francisco and San Pablo, Straits of Carquines and Suisun Bay, Confluence and Deltic branches of the Sacramento and San Joaquin rivers, and the Sacramento river (with the middle Fork) to the American river, including the cities of Sacramento and Boston, together with sailing directions, tables of latitude, longitude, and variation, bearings, and distances and tidal observations.

The surveys above enumerated are the result of individual enterprise.

The series consists of six charts, 30 by 20 inches each.

[The general sheet exhibits at one view the whole survey made by the exhibitor, including a survey of San Joaquin river by Charles Drayton Gibbes, with air line and river distances between all the important cities in the State of California.

Sheet No. 1, exhibits the Farallones and entrance of the bay of San Francisco, on a scale of half an inch to the mile.

Sheets, Nos. 2, 3, and 4, are on a scale of about one inch to a mile; combined they extend from the bay of San Francisco to the American River, showing the locations to the cities of San Francisco, Vellejo, (the capital of the State), Benicia, Martinez, New York of the Pacific, Suisun, Sacramento, and Boston.

Sheet No. 5 contains charts of the principal anchorages from San Francisco to Sacramento city on enlarged scales.—S.]

599 **Brainard, C. H.**, *New York.*
Daguerreotypes of the President and Cabinet of the United States.

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ND BY
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